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Report Number: 214-TRC-03-007

Safety Compliance Testing For FMVSS 214

Side Impact Protection

Indicant

Fuji Heavy Industries LTD

2003 Subaru Legacy Sedan

NHTSA Number: C35504

Transportation Research Center Inc.

10820 State Route 347

P. O. Box B-67

East Liberty, OH 43319



April 15, 2003

Final Report

**U. S. Department Of Transportation
National Highway Traffic Safety Administration
Enforcement**

Office of Vehicle Safety Compliance

400 Seventh Street, S. W.

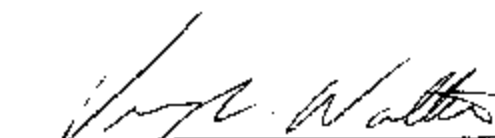
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Washington, DC 20590

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Test Performed By: Michael S. Postle, Engineering Technician

Report Approved By:



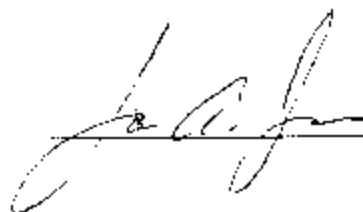
Virginia L. Watters, Project Manager
Transportation Research Center Inc.

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16. Abstract This 55/28 km/h 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject vehicle, a 2003 Subaru Legacy 4-door sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-06 (except the test was conducted 8 km/h (5 mph) faster than the standard specifies) to determine FMVSS 214 Side Impact Protection compliance. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on April 15, 2003. The impact velocity of the Moving Deformable Barrier (MDB) was 62.0 km/h, and the ambient temperature at the struck (driver) side of the target vehicle at the time of impact was 21° C. The target vehicle's post-test maximum crush was 279 mm at Level 2. The test or target vehicle's performance is given below (with FIR filter): <table border="0"> <thead> <tr> <th></th> <th><u>Front SID-IIII</u></th> <th></th> <th><u>Rear SID-IIII</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td>77.4</td> <td>g's</td> <td>44.6</td> <td>g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td>63.8</td> <td>g's</td> <td>48.9</td> <td>g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td>72.5</td> <td>g's</td> <td>78.5</td> <td>g's</td> </tr> <tr> <td>Thoracic Trauma Index, (TTI):</td> <td>74.9</td> <td>g's</td> <td>63.7</td> <td>g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td>68.4</td> <td>g's</td> <td>65.2</td> <td>g's</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during side impact event.					<u>Front SID-IIII</u>		<u>Rear SID-IIII</u>		Left Upper Rib Acceleration:	77.4	g's	44.6	g's	Left Lower Rib Acceleration:	63.8	g's	48.9	g's	Lower Spine Acceleration:	72.5	g's	78.5	g's	Thoracic Trauma Index, (TTI):	74.9	g's	63.7	g's	Pelvis Acceleration (PEV):	68.4	g's	65.2	g's
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17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID-IIII)		18. Distribution Statement Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 5108 (NPO-230), 400 Seventh Street, S.W. Washington, DC 20590 Telephone No. (202) 366-4946 Attn: Robert Hornicle																															
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Section 1

Purpose and Test Procedure

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D-11114. The purpose of this test was to evaluate side impact protection in a 2003 Subaru Legacy sedan. The test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 2001), with the exception of test speed, which was at the NCAP High-Speed Lateral Impact level (62.0 km/h).

Section 2

Summary of Side Impact Test

A 2003 Subaru Legacy 4-door sedan was impacted on the driver side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 62.0 km/h (38.5 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on April 15, 2003. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SID-HIIs) are included in Appendix A.

Two restrained Side Impact Hybrid III Dummies (SID-HIIs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OVSC Side Impact Laboratory Test Procedure (TP-214D-06, dated July 2001). Both SID-HIIs were certified prior to this test. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SID-HIIs were instrumented with the following accelerometers:

1. Head (HED) triaxial and redundant accelerometers (X, Y, and Z-directions)
2. Neck (NEK) triaxial force and moment load cells (X, Y, and Z-directions)
3. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
4. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
5. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
6. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)

A summary of the side impact dummy (SID-HIII) configuration and verification test data can be found in Appendix C. A total of 73 channels of data were recorded. Appendix B contains the vehicle, MDB, and dummy response data traces.

The following tables summarize the results of the test:

Injury Criteria	Front SID-HIII	Rear SID-HIII
ITI (g)	74.9	63.7
PEV (g)	68.4	65.2

Head Injury Criteria (HIC)

Injury Criteria	Front SID-HIII	Rear SID-HIII
HIC	181	561
t_1 (ms)	47.1	51.4
t_2 (ms)	83.1	66.9
Average Acceleration $t_1 - t_2$ (g)	30.2	66.4

HIC is as defined in FMVSS 208. The maximum time interval t_1 to t_2 is 36 ms.

Neck Injury Criteria

Maximum Values	Front SID-HIII	Rear SID-HIII
Neck X-axis Force (N)	-805	716
Neck Y-axis Force (N)	676	-1413
Neck Z-axis Force (N)	1470	-2126
Moment About X-axis (Nm) ¹	70.7	-126.2
Moment About Y-axis (Nm)	29.6	-25.3
Moment About Z-axis (Nm)	31.5	-20.5

¹ Calculated about the occipital condyle with the following formula: $M_{occ} = M_v - 0.01778F_y$.

Data Acquisition Explanations

The vehicle's left side sill at the rear seat Y-axis acceleration channel, LRSYG1, recorded questionable data and did not return to zero. This affected the vehicle's left side sill at the rear seat Y-axis velocity and displacement measurements.

The vehicle's left front door centerline Y-axis acceleration channel, LFCYG1, recorded no valid data throughout the event. This affected the vehicle's left side sill at the rear seat Y-axis velocity and displacement measurements.

The vehicle's left front door upper centerline Y-axis acceleration channel, LFCYU1, exceeded full-scale at approximately 27 ms and recorded no valid data after that. This affected the vehicle's left front door upper centerline Y-axis velocity and displacement measurements.

The vehicle's left lower A-post Y-axis acceleration channel, LLAYG1, recorded no valid data after approximately 24 milliseconds. This affected the vehicle's left lower A-post Y-axis velocity measurement.

The vehicle's left middle A-post Y-axis acceleration channel, LMAYG1, exceeded full-scale at approximately 27 ms and recorded no valid data after that. This affected the vehicle's left middle A-post Y-axis velocity measurement.

The vehicle's left rear seat track Y-axis acceleration channel, LRTYG1, exceeded full-scale at approximately 5 ms and recorded no valid data after that. This affected the vehicle's left rear seat track Y-axis velocity measurement.

Section 3

Summary of Test Results

Data Sheet 1

General Test Vehicle Parameter Data

Test Vehicle Information:

Vehicle Year/Make/Model: 2003 Subaru Legacy
Vehicle Body Style/Color: 4-door sedan/Silver VIN: 4S3BH635436212096
Vehicle NHTSA No.: C35504 Build Date: 01/03
Engine Data: 4 Cylinders; CID; 2.5 Liters; cc
Placement: X Longitudinal; or - Lateral; or - Horizontal
Transmission: 5 Speed; X Manual; - Automatic; - Overdrive
Final Drive: - RWD; - FWD; X Four-Wheel Drive
Odometer Reading: 73 mi
Options: X A/C; X Power steering; X Pwr. brakes; X Power windows

Data From Vehicle's Tire Placard:

Tire Pressure (at capacity)* 220 kPa Front; 210 kPa Rear
Recommended Tire Size: P205/55R16
Tires on Test Vehicle: P205/55R16 Manufacturer: Bridgestone, Potenza

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; 3rd seat; 5 Total
Type of Front Seats: X Bucket; - Bench; - Split bench
Type of Front Seat Back: - Fixed; X Adjustable with X Lever or - Knob
Vehicle Max. Capacity Loading - 386 kg (A)
No. of Occupants x 68.04 kg. = 340 kg (B)
Vehicle Cargo Capacity (A-B) = 46 kg

Test Vehicle Delivered Weight With Maximum Fluids:

Left Front	=	<u>423.0</u> kg	Left Rear	=	<u>341.0</u> kg
Right Front	=	<u>401.5</u> kg	Right Rear	=	<u>334.5</u> kg
Total Front	=	<u>824.5</u> kg	Total Rear	=	<u>675.5</u> kg
Front % of Total Weight	=	<u>55.0</u> %	Rear % of Total Weight	=	<u>45.0</u> %
Total Weight	=	<u>1500</u> kg			

* Tire pressure used in test.

Data Sheet 1 (continued)

General Test Vehicle Parameter Data

Calculation Of Vehicle's Target Test Weight:

Total Test Vehicle Delivered Weight With Max. Fluids = 1500 kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle = 46 kg (B)
Weight of Instrumented Side Impact Dummies (2 X 84.0 kg) = 168 kg (C)
Test Vehicle Target Weight: = 1714 kg (A+B+C)

Fully Loaded Test Vehicle (UDW ÷ 2 SIDs ÷ Cargo):

Left Front	=	<u>473.0</u> kg	Left Rear	=	<u>445.5</u> kg
Right Front	=	<u>403.0</u> kg	Right Rear	=	<u>396.0</u> kg
Total Front	=	<u>876.0</u> kg	Total Rear	=	<u>841.5</u> kg
Front % of Total Weight	=	<u>51.0</u> %	Rear % of Total Weight	=	<u>49.0</u> %
Total Weight	=	<u>1717.5</u> kg			

As Tested Weight of Test Vehicle (2 SIDs + Cargo + Equipment & Instrumentation):

Left Front	=	<u>464.8</u> kg	Left Rear	=	<u>414.0</u> kg
Right Front	=	<u>427.2</u> kg	Right Rear	=	<u>403.0</u> kg
Total Front	=	<u>892.0</u> kg	Total Rear	=	<u>817.0</u> kg
Front % of Total Weight	=	<u>52.2</u> %	Rear % of Total Weight	=	<u>47.8</u> %
Total Weight	=	<u>1709.0</u> kg			

Test Vehicle Attitude (all dimensions in millimeters):

As Delivered	Fully Loaded	Ready For Test
Right Front <u>677</u>	Right Front <u>663</u>	Right Front <u>667</u>
Left Front <u>675</u>	Left Front <u>658</u>	Left Front <u>666</u>
Right Rear <u>667</u>	Right Rear <u>640</u>	Right Rear <u>646</u>
Left Rear <u>667</u>	Left Rear <u>625</u>	Left Rear <u>643</u>

Test Vehicle Wheelbase: 2652 mm

C.G. = 1268 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = 4530 mm
Left Side = 4530 mm
Centerline = 4677 mm

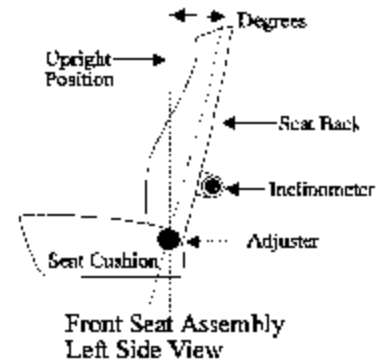
Data Sheet 1 (continued)

General Test Vehicle Parameter Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



Front Seat Cushion Placement: 10th (from front) of 18 positions; 1st notch rear of mid (no mid notch)

Total Length of Fore/Aft Adjustment Travel: 230 mm

Total Number of Adjustment Positions or Detents: 18

Front Seat Back Adjustment Position: The back was adjusted the 4th locking position (counting the upright position as #1). The seat measured 8.1° at the headrest post.

Seat Back Torso Angle: N/A degrees

Second Position Seat Placement: Fixed

Total Length Of Fore/Aft Adjustment Travel: N/A mm

Seat Back Adjustment Position: N/A, not adjustable

Adjustable Steering Column Position: 23.2°

Window Positions:

Right Front: Open

Right Rear: Open

Left Front: Closed

Left Rear: Closed

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

Amount of Stoddard Solvent In Fuel Tank:

64.0 liters (fuel tank usable capacity)

59.8 liters used in test (92% - 94% of fuel tank usable capacity)

Location of Impact Point On Test Vehicle Side To Be Impacted:

Wheelbase = 2652 millimeters

Intended impact point is 386 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 394 millimeters rearward of front axle centerline

Data Sheet 2

Test Vehicle Summary of Results

Vehicle Year/Make/Model: 2003/Subaru/Legacy

Body Style: 4-door sedan

VIN: 4S3BE635436212096

NHTSA No.: C35504

Build Date: 01/03

Test Date: 04/15/03

Vehicle Overall Length = 4677 mm

Overall Width = 1735 mm

Vehicle Test Weight (Pre-Test):

$$\text{Left Front} \quad - \quad \underline{464.8} \quad \text{kg} \quad \text{Left Rear} \quad = \quad \underline{414.0} \quad \text{kg}$$

Right Front = 427.2 kg. Right Rear = 403.0 kg

$$\text{Total Front} = \frac{892.0}{1} \text{ kg} \quad \text{Total Rear} = \frac{817.0}{1} \text{ kg}$$

Total Weight = 1709.0 kg

Wheelbase = 2652 mm

Longitudinal C.G. From Center Of Front Axle = $\frac{1268}{}$ mm

Impact Angle With Respect To Impactor = 90 degrees

Impact Point:

Actual Impact Point is 8 mm right of nominal impact ref. line (Lateral)

Actual Impact Point is 3 mm up _____ from nominal impact point (Vertical)

Maximum Exterior Static Crush:

1. Level 1 (265 mm above ground) = 104 mm

2. Level 2 (540 mm above ground) = 279 mm

3. Level 3 (615 mm above ground) = 242 mm

4. Level 4 (782 mm above ground) = 256 mm

5. Level 5 (1345 mm above ground) ÷ 51 mm

Maximum Post-Test Intrusion = 279 mm

Occupants:

Front Passenger

Rear Passenger

Dummy Identification	065	028
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Restraints Used	Seat belt	Seat belt
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Instrumentation:

Number of Vehicle Data Channels: = 26

Number of Cameras: Onboard = 3 Offboard = 8 Total = 11

Data Sheet 3

Moving Deformable Barrier (MDB) Summary

MDB Face Manufacturer And Serial Number:

Plascore, 017A0303-3/013C0205

Position Of Impactor (MDB) On Monorail:

Crabbed 27°

MDB Specifications:

Overall Width of Framework Carriage = 1251 mm

Overall Length of MDB (Incl. honeycomb impact face) = 4014 mm

Wheelbase of Framework Carriage = 2591 mm

Track of Framework Carriage (Front & Rear) = 1881 mm

C.G. Location Rearward of Front Axle = 1118 mm

MDB Weight:

Left Front = 380.4 kg Left Rear = 301.0 kg

Right Front = 391.6 kg Right Rear = 285.0 kg

Total Front = 772.0 kg Total Rear = 586.0 kg

Total MDB Weight = 1358.0 kg

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degrees

Impact Speed = 62.0 km/h

Maximum Static Crush of Honeycomb Impact Face:

1. Row A at Center of Bumper Level = 207 millimeters

2. Row B at Top of Bumper Level = 122 millimeters

3. Row C at Mid Level = 134 millimeters

4. Row D at Top of Stack Level = 137 millimeters

Instrumentation:

Number of MDB Data Channels = 5

Data Sheet 4

Post-Test Observations

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Visible Dummy Contact Points:

	<u>Left Front SID-HIII</u>	<u>Left Rear SID-HIII</u>
Head:	<u>Head restraint</u>	<u>C-pillar, side header, head restraint</u>
Upper Torso:	<u>Door panel</u>	<u>Door panel</u>
Lower Torso:	<u>Door panel</u>	<u>Door panel</u>
Left Knee:	<u>Door panel</u>	<u>Door panel</u>
Right Knee:	<u>None</u>	<u>None</u>

Door Opening:

	<u>Left Side</u>	<u>Right Side</u>
Front:	<u>Latched and jammed shut</u>	<u>Easy</u>
Rear:	<u>Latched and jammed shut</u>	<u>Easy</u>

MDB Distance From Target Impact Point:

Vertical: 3 mm up from target
Horizontal: 8 mm right from target

Arm Rest Locations:

Front: 265 mm below the bottom of the window
Rear: 255 mm below the bottom of the window

Seat Movement:

Front: None
Rear: None

Glazing Damage:

Windshield: None
Window: Both side windows shattered.

Pillar Separation: No

Sill Separation: No

Other Notable Impact Effects:

None

Section 4

Occupant and Vehicle Information

Data Sheet 5

SID-HHII Instrumentation Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

TEST NUMBER: 030415

DRIVER DUMMY SERIAL NUMBER: 065

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	4.3 g	@ 255.8 ms	20.5 g	@ 71.1 ms
LATERAL	22.0 g	@ 69.6 ms	3.7 g	@ 208.6 ms
VERTICAL	38.2 g	@ 64.6 ms	0.9 g	@ 89.6 ms
RESULTANT	43.2 g	@ 64.6 ms		
HIC	181 from 47.1 to 83.1 ms			

HEAD REDUNDANT ACCELERATION

LONGITUDINAL	4.4 g	@ 224.0 ms	19.6 g	@ 71.1 ms
LATERAL	22.6 g	@ 70.5 ms	4.7 g	@ 204.9 ms
VERTICAL	39.7 g	@ 64.7 ms	1.0 g	@ 89.9 ms
RESULTANT	44.3 g	@ 64.7 ms		
HIC	197 from 45.7 to 81.7 ms			

NECK FORCE

X-AXIS SHEAR	42.0 N	@ 217.8 ms	804.7 N	@ 71.1 ms
Y-AXIS SHEAR	676.3 N	@ 70.1 ms	165.9 N	@ 32.5 ms
Z-AXIS AXIAL	1469.6 N	@ 64.7 ms	125.2 N	@ 89.8 ms

NECK MOMENT

ABOUT X-AXIS	60.8 N-m	@ 73.5 ms	49.0 N-m	@ 39.4 ms
ABOUT Y-AXIS	29.6 N-m	@ 85.4 ms	20.6 N-m	@ 42.9 ms
ABOUT Z-AXIS	31.5 N-m	@ 77.3 ms	14.1 N-m	@ 280.6 ms
OCC COND ABOU X	70.7 N-m	@ 73.4 ms	44.9 N-m	@ 39.4 ms

LEFT UPPER RIB ACCELERATION

LATERAL (P)	77.4 g	@ 30.0 ms	22.5 g	@ 73.8 ms
LATERAL (R)	78.1 g	@ 30.0 ms	22.1 g	@ 74.4 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	63.8 g	@ 30.6 ms	16.1 g	@ 73.8 ms
LATERAL (R)	64.6 g	@ 30.6 ms	15.7 g	@ 73.8 ms
TTI d (P)	74.9			
TTI d (R)	74.8			

LOWER SPINE ACCELERATION

LATERAL (P)	72.5 g	@ 33.7 ms	25.0 g	@ 65.0 ms
LATERAL (R)	71.5 g	@ 33.7 ms	24.9 g	@ 65.0 ms

PELVIS ACCELERATION

LATERAL (P)	68.4 g	@ 35.0 ms	7.0 g	@ 60.0 ms
LATERAL (R)	68.5 g	@ 35.0 ms	5.9 g	@ 60.0 ms

POSITIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

NEGATIVE DIRECTION

LONGITUDINAL: REARWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

Data Sheet 5 (Continued)

SID-IIII Instrumentation Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

TEST NUMBER: 030415

PASSENGER DUMMY SERIAL NUMBER: 028

POSITIVE
DIRECTION

NEGATIVE
DIRECTION

HEAD ACCELERATION

LONGITUDINAL	3.1 g	@	94.3 ms	24.1 g	@	60.8 ms
LATERAL	77.4 g	@	61.2 ms	8.3 g	@	74.0 ms
VERTICAL	18.6 g	@	52.5 ms	53.5 g	@	63.0 ms
RESULTANT	87.8 g	@	61.2 ms			
HIC	561 from 51.4 to 66.8 ms					

HEAD REDUNDANT ACCELERATION

LONGITUDINAL	3.1 g	@	93.8 ms	23.8 g	@	60.8 ms
LATERAL	78.1 g	@	61.2 ms	8.1 g	@	74.0 ms
VERTICAL	19.3 g	@	56.9 ms	53.4 g	@	62.9 ms
RESULTANT	87.9 g	@	61.2 ms			
HIC	571 from 51.4 to 66.7 ms					

NECK FORCE

X-AXIS SHEAR	716.2 N	@	65.3 ms	109.2 N	@	102.7 ms
Y-AXIS SHEAR	111.7 N	@	57.3 ms	1412.9 N	@	64.8 ms
Z-AXIS AXIAL	188.9 N	@	198.2 ms	2126.3 N	@	64.0 ms

NECK MOMENT

ABOUT X-AXIS	18.0 N-m	@	116.6 ms	125.2 N-m	@	59.9 ms
ABOUT Y-AXIS	20.9 N-m	@	115.4 ms	25.3 N-m	@	59.9 ms
ABOUT Z-AXIS	6.8 N-m	@	105.1 ms	20.5 N-m	@	61.4 ms
OCC CO ABOUT X	17.2 N-m	@	126.6 ms	126.2 N-m	@	60.2 ms

LEFT UPPER RIB ACCELERATION

LATERAL (P)	44.6 g	@	45.6 ms	8.3 g	@	117.5 ms
LATERAL (R)	43.4 g	@	46.3 ms	8.5 g	@	117.5 ms

LEFT LOWER RIB ACCELERATION

LATERAL (P)	48.9 g	@	45.6 ms	14.9 g	@	76.9 ms
LATERAL (R)	47.7 g	@	45.6 ms	14.4 g	@	76.9 ms
TTI d (P)	63.7					
TTI d (R)	63.5					

LOWER SPINE ACCELERATION

LATERAL (P)	78.5 g	@	53.7 ms	14.0 g	@	72.5 ms
LATERAL (R)	79.3 g	@	53.7 ms	14.6 g	@	72.5 ms

PELVIS ACCELERATION

LATERAL (P)	65.2 g	@	49.4 ms	4.4 g	@	150.6 ms
LATERAL (R)	65.5 g	@	49.4 ms	4.3 g	@	150.0 ms

POSITIVE DIRECTION

LONGITUDINAL: FORWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

NEGATIVE DIRECTION

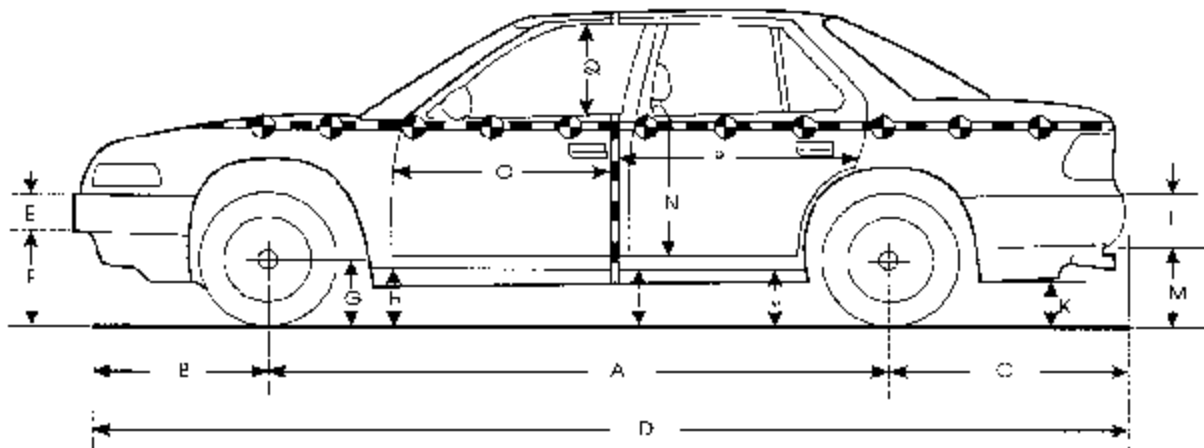
LONGITUDINAL: REARWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

Data Sheet 6

Vehicle Pre-Test And Post-Test Measurements

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



Left Side View

Note: All dimensions are in millimeters with tolerance of ± 3 mm

	Pre-Test (as delivered)	Pre-Test (as tested)	Post-Test (as tested)	Change
A	2652	2652	2630	22
B	980	980	975	5
C	1045	1045	1050	-5
D	4677	4677	4675	2
E	100	100	100	0
F	400	398	418	-20
G	296	300	300	0
H	244	231	257	-26
I	245	232	275	-43
J1	185	165	215	-50
J2	249	225	265	-40
K	284	254	257	-3
L	185	185	185	0
M	400	366	370	-4
N	703	703	636	67
O	735	735	725	10
P	1275	1275	1190	85
Q	420	420	417	3
R	4530	4530	4539	-9
S	4530	4530	4490	40
T	1324	1324	1166	158

D = Length as centerline
T = Width at B-pillar

E&L = Bumper Thickness
J = To Pinch Weld

R = Right Side Length
J2 = To Sill

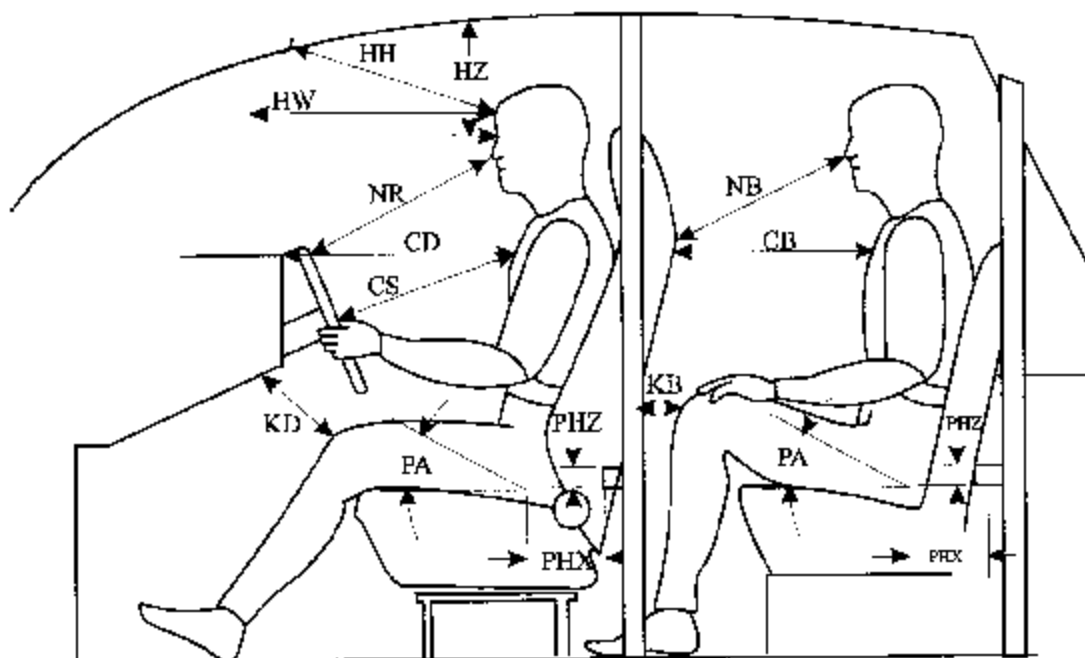
S = Left Side Length

Data Sheet 7

SID Longitudinal Clearance Dimensions

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



Left Side View

Note: All measurements are in millimeters with tolerance of ± 3 mm

Measurement	Driver SID-HIII # 065	Left Rear Pass. SID-HIII # 028
HH	363	N/A
HW	534	N/A
HZ	130	130
NR/NB	460	723
CD/CB	513	553
CS	337	N/A
KDL(KDA°)/KBL(KBA°)	86/(61.4°)	160/(63.8°)
KDR(KDA°)/KBR(KBA°)	99/(69.7°)	143/(68.2°)
PA°	23.5°	24.6°
PHX	200	230
PHZ	115	295

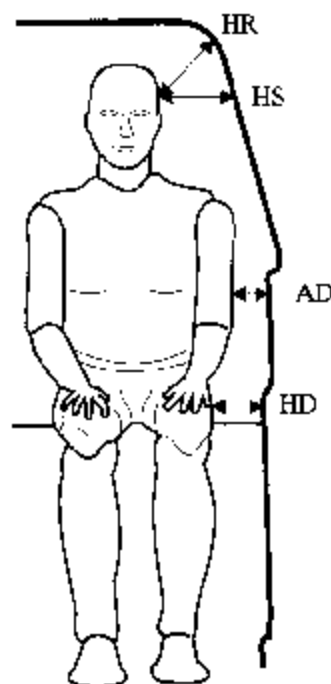
Note: 2-door vehicle shown. Rear dummy PHX and PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

Data Sheet 8

SID Lateral Clearance Dimensions

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



Note: All measurements are in millimeters with tolerance of ± 3 mm

Measurement	Driver SID-HIII # 065	Left Rear Pass. SID-HIII # 028
HR	220	195
HS	305	340
AD*	Lower: 108 Upper: 100	Lower: 163 Upper: 143
HD	134	188

* Lower measurement is taken laterally at center of the lower rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

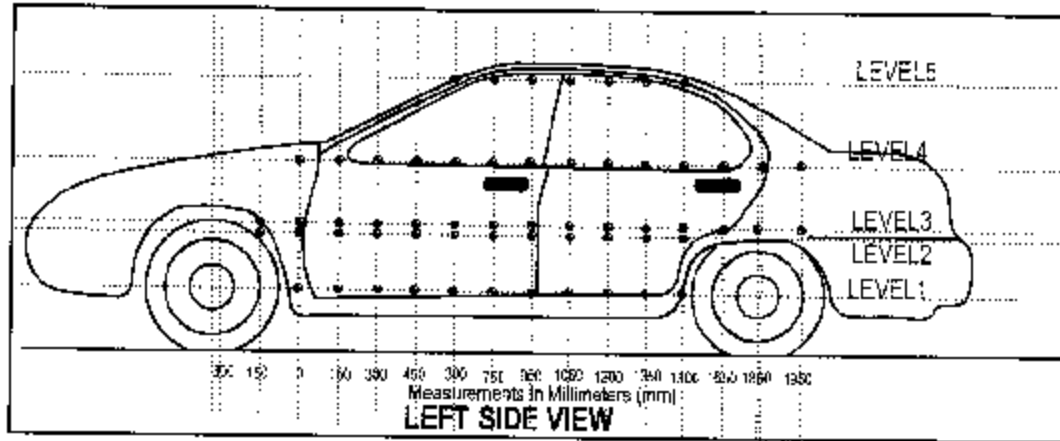
Upper measurement is taken laterally at center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

Data Sheet 9

Vehicle Side Measurements

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



Level 5 - Window Top

Level 4 - Window Sill

Level 3 - Mid-Door

Level 2 - Occupant H-Point

Level 1 - Axle Centerline Height or Sill Top Height

Measurements Are Taken When The Vehicle Is In The "As Tested" Configuration.

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	<u>1345</u>	mm
Level 4 @ Window Sill	=	<u>782</u>	mm
Level 3 @ Mid Door	=	<u>615</u>	mm
Level 2 @ Occupant H-Point	=	<u>540</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>265</u>	mm

Data Sheet 10

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Location	Height		(mm) From Impact Point												
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	750
Level 1 Side Sill	265	Pre	---	733	692	---	---	---	---	---	---	688	695	699	702
		Post	---	724	690	---	---	---	---	---	---	705	750	756	777
		Crush	---	-9	2	---	---	---	---	---	---	17	55	57	75
Level 2 H-Point	540	Pre	---	735	700	676	---	---	---	---	654	653	650	648	646
		Post	---	729	698	677	---	---	---	---	690	775	830	850	881
		Crush	---	-6	-2	1	---	---	---	---	36	122	180	202	235
Level 3 Mid-Door	615	Pre	---	---	715	686	---	---	---	---	655	652	650	649	646
		Post	---	---	710	687	---	---	---	---	694	767	808	827	865
		Crush	---	---	-5	1	---	---	---	---	39	115	158	178	219
Level 4 Window Sill	782	Pre	---	---	---	780	760	750	735	723	714	710	702	700	692
		Post	---	---	798	784	763	751	740	733	727	736	801	844	855
		Crush	---	---	---	4	3	1	5	10	13	26	99	144	163
Level 5 Window Top	1345	Pre	---	---	---	---	---	---	---	---	---	---	---	---	955
		Post	---	---	---	---	---	---	---	---	---	---	---	---	975
		Crush	---	---	---	---	---	---	---	---	---	---	---	---	20

Data Sheet 10 (Continued)

Vehicle Exterior Crush Profiles - All Levels

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Location	Height	(mm) From Impact Point														
		900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700		
Level 1 Side Sill	Pre	700	701	702	702	704	700	693	---	---	---	---	---	688		
	Post	794	801	806	782	760	735	707	---	---	---	---	---	687		
	Crush	94	100	104	80	56	35	14	---	---	---	---	---	-1		
Level 2 11-Point	Pre	646	646	646	646	652	654	655	655	---	---	---	---	674		
	Post	893	898	925	900	894	880	830	---	---	---	---	---	676		
	Crush	247	252	279	254	242	226	175	---	---	---	---	---	2		
Level 3 Mid-Door	Pre	646	646	645	644	647	648	652	652	---	---	---	650	682		
	Post	883	880	887	876	879	884	860	722	---	---	---	655	685		
	Crush	237	234	242	232	232	236	208	70	---	---	---	5	3		
Level 4 Window Sill	Pre	688	685	675	675	675	674	675	676	677	685	694	702	714		
	Post	863	872	902	905	931	893	842	770	690	703	703	711	718		
	Crush	175	187	227	230	256	219	167	94	13	18	9	9	4		
Level 5 Window Top	Pre	940	937	924	926	930	934	940	954	---	---	---	---	---		
	Post	966	972	975	856	954	953	950	973	---	---	---	---	---		
	Crush	26	35	51	-70	24	19	10	19	---	---	---	---	---		

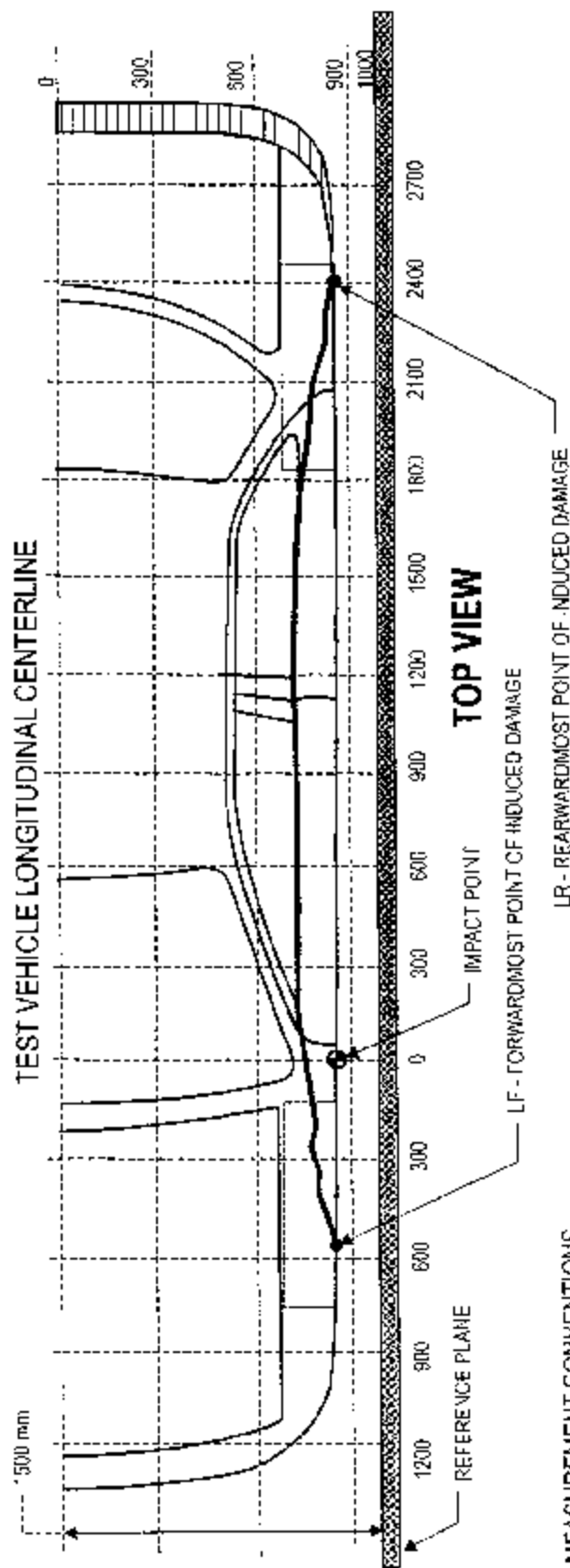
Data Sheet 11

Vehicle Damage Profile Distances

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

NOTE: All measurements are in millimeters (mm) and should be accurate to plus or minus 3mm.



MEASUREMENT CONVENTIONS

Forward of the impact point (towards front of vehicle) is considered negative (-)

Rearward of the impact point (towards rear end of vehicle) is considered positive (+)

DPD Measurements	Post-Test (mm)	Pre-Test (mm)	Static Crush (mm)
6: L/R = 0 mm (Level 3)	694	655	39
5: 450 mm (Level 2)	850	648	202
4: 750 mm (Level 2)	881	646	235
3: 1050 mm (Level 2)	898	646	252
2: 1500 mm (Level 4)	931	675	256
1: L/R = 1950 mm (Level 4)	770	676	94

Full length of induced damage was 0 to 1950 mm.

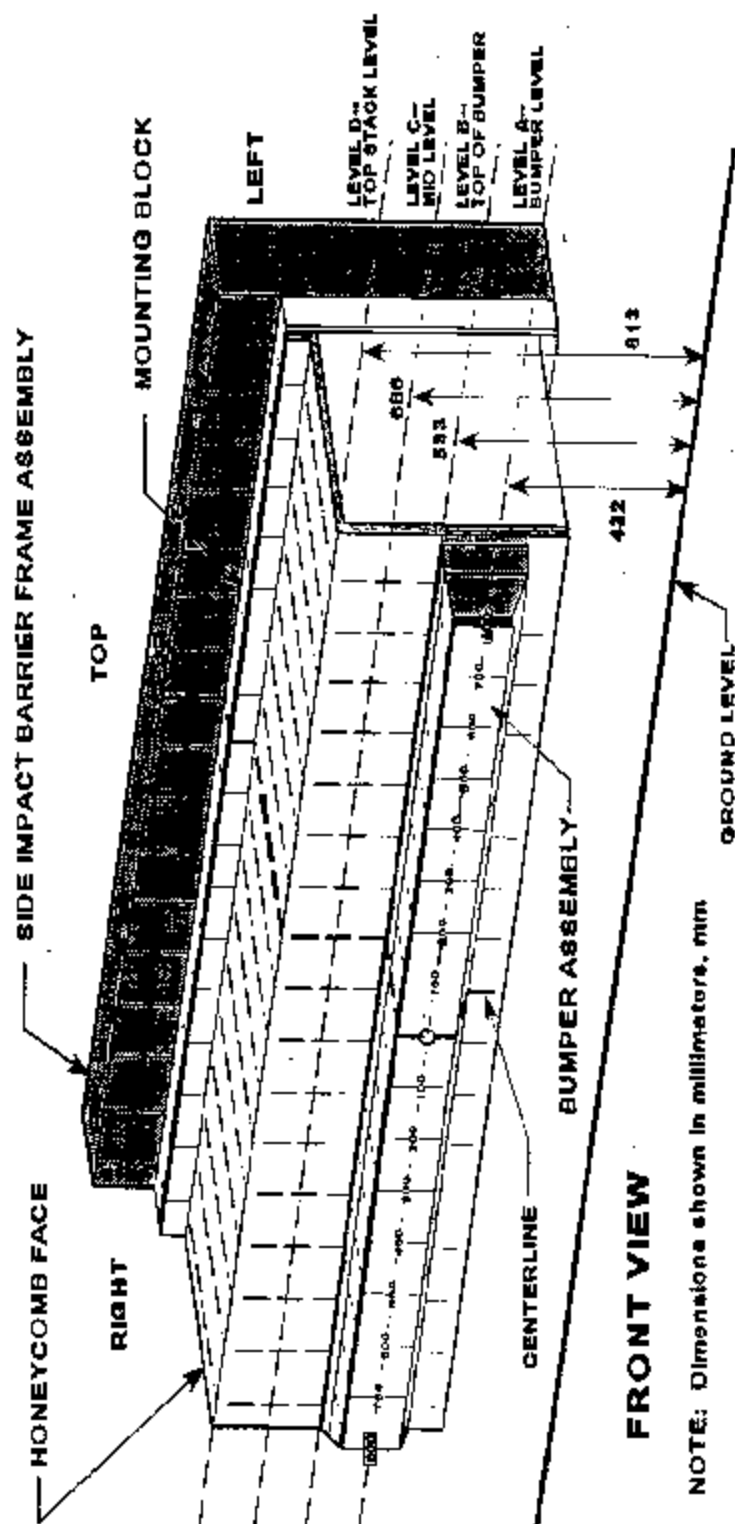
Data Sheet 12

Exterior Static Crush For Impactor Face

(Grid as looking at MDB from front)

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



FRONT VIEW

NOTE: Dimensions shown in millimeters, mm

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Location	Height At CL	Distance Right of Center (mm)								0	Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
Top Stack Level - Level D	814	-100	63	14	2	5	-13	-32	-34	-34	-27	-27	-27	-29	-37	-53	-90	-137
Mid Level - Level C	685	-63	-45	-9	-9	-12	-23	-43	-38	-19	-13	-11	-14	-19	-28	-46	-73	-134
Top Bumper Level - Level B	560	-94	-85	-79	-71	-69	-63	-59	-53	-49	-47	-47	-51	-56	-63	-76	-95	-122
Mid Bumper Level - Level A	432	-207	-199	-178	-156	-144	-142	-137	-125	-115	-105	-99	-100	-101	-107	-122	-145	-167

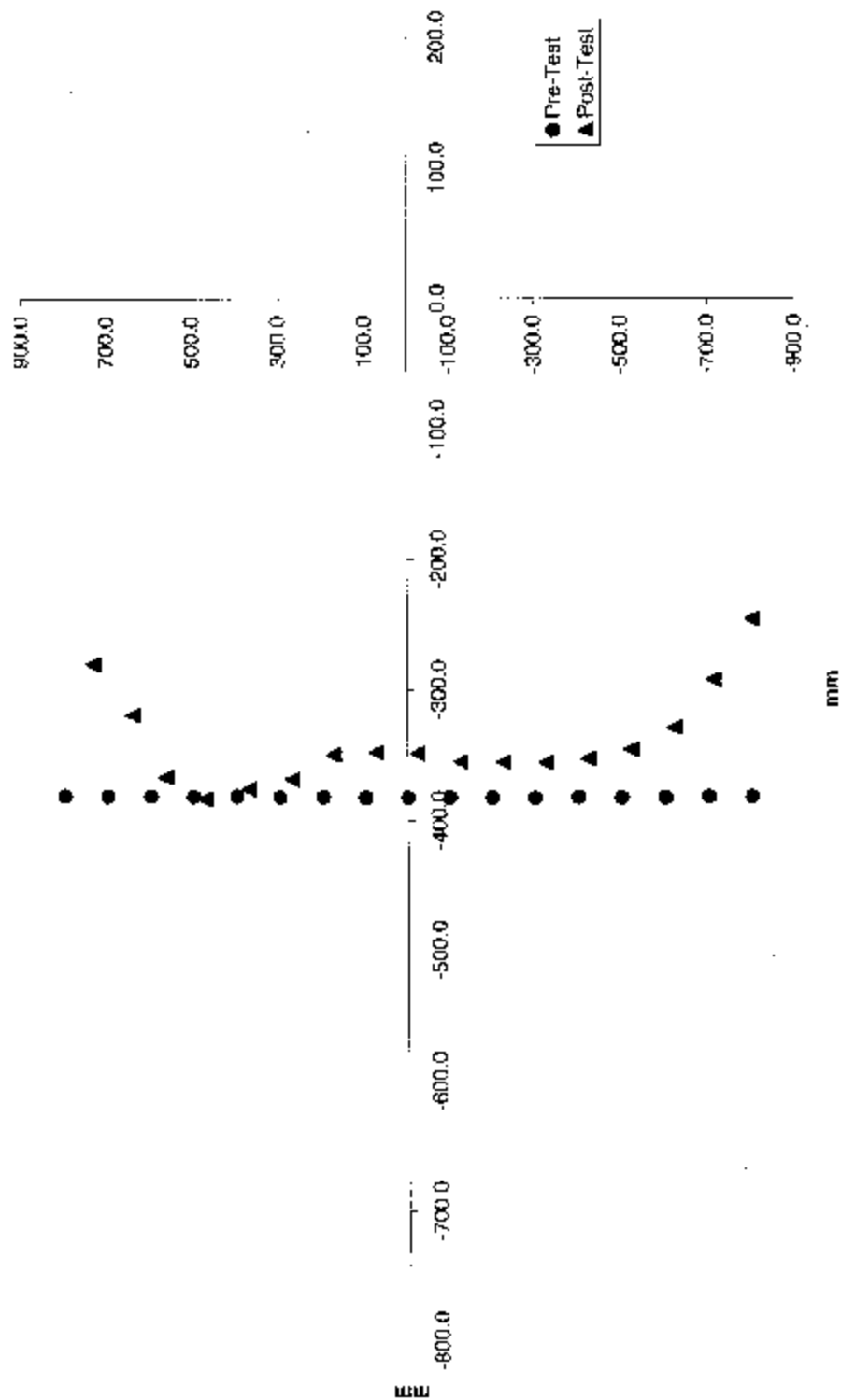
All measurements are in millimeters and have a tolerance of ± 3 mm.

Data Sheet 12 (Continued)
Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NIITSA No.: C35504

Level D - Deformable Barrier Face Profile 1-17



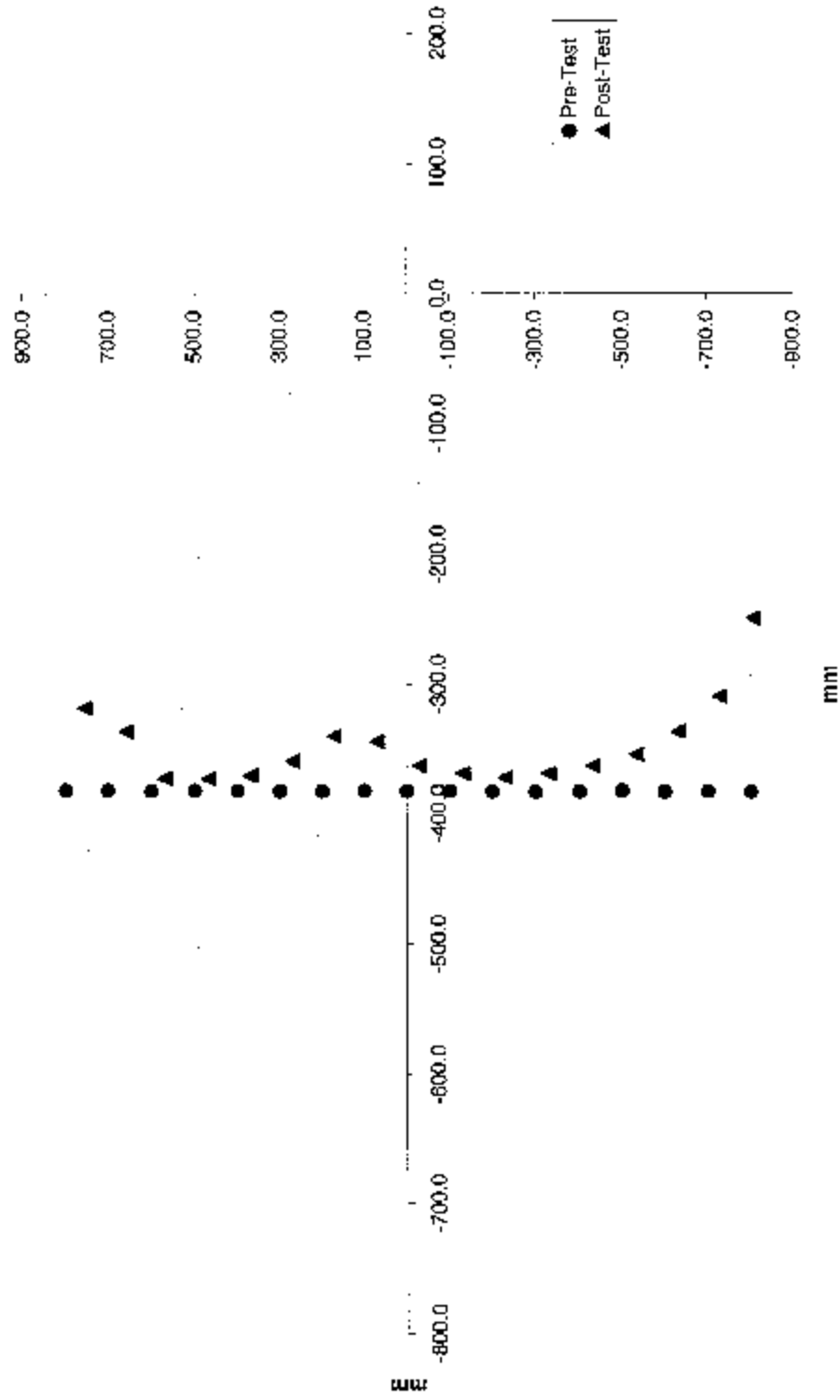
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Level C - Deformable Barrier Face Profile 18-34



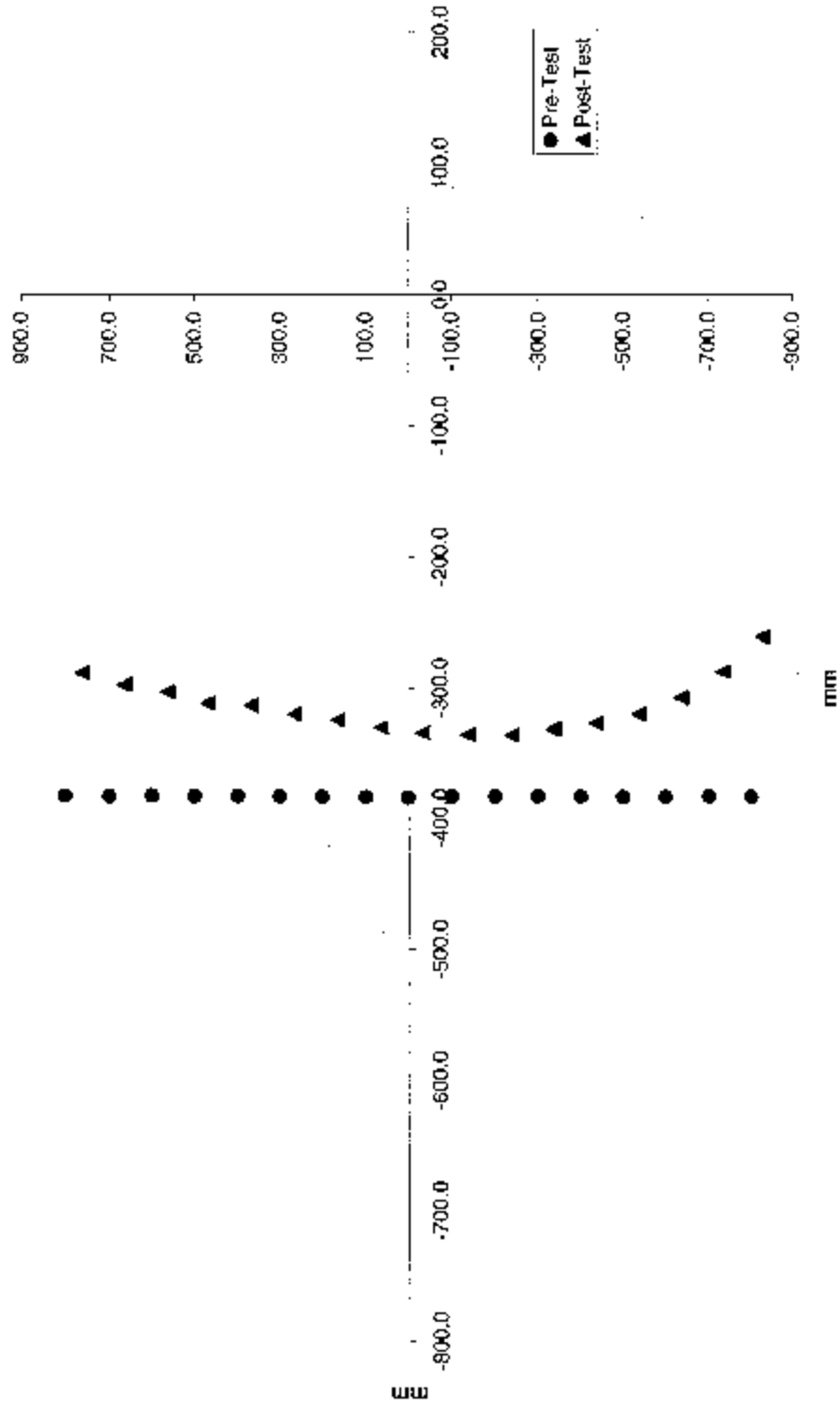
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Level B - Deformable Barrier Face Profile 35-61



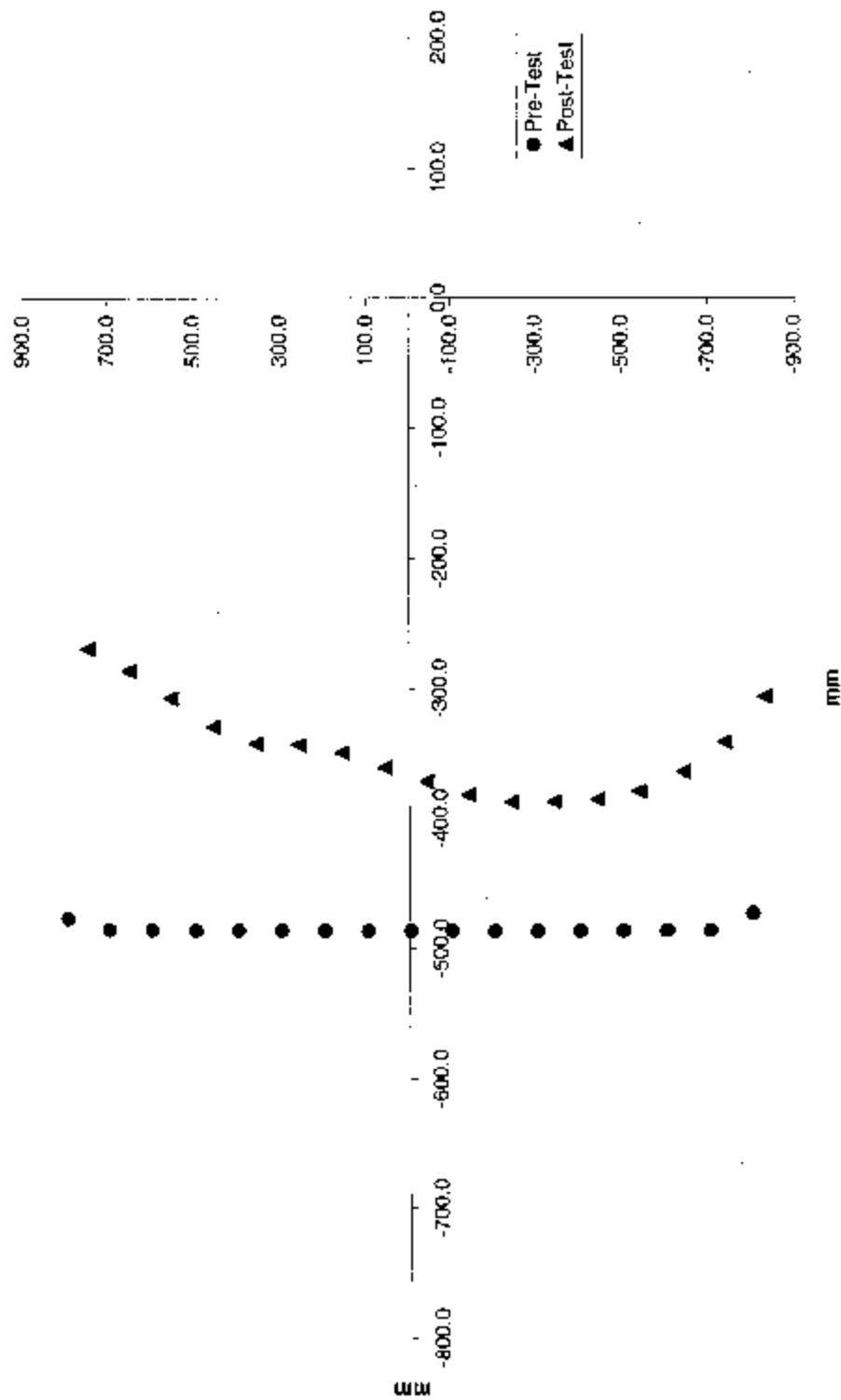
Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Level A - Deformable Barrier Face Profile 52-68



Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Deformable Barrier Face Profile

Level D - Top Stack

Index	Pre-Test			Zmm
	Xmm	Ymm		
1	-380.0	798.4		-39.0
2	-380.3	698.8		-39.5
3	-380.4	599.1		-39.9
4	-380.8	498.9		-40.2
5	-380.5	398.2		-39.4
6	-381.6	298.0		-40.5
7	-381.3	198.1		-41.1
8	-382.0	98.3		-41.1
9	-382.1	-1.1		-41.9
10	-382.0	-101.0		-42.5
11	-382.3	-201.2		-43.6
12	-382.6	-301.2		-43.5
13	-382.2	-400.6		-43.8
14	-382.7	-501.1		-44.2
15	-382.6	-601.6		-44.4
16	-382.6	-701.5		-45.3
17	-382.5	-801.1		-44.9

Post-Test

Index	Xmm	Ymm	Zmm
1	-279.6	731.9	-104.7
2	-318.4	640.8	-108.1
3	-366.1	565.5	-97.2
4	-383.1	471.4	-94.9
5	-375.6	371.0	-92.1
6	-368.4	270.9	-88.9
7	-349.4	173.2	-84.7
8	-348.1	73.4	-81.1
9	-348.7	-25.9	-78.2
10	-355.1	-125.6	-74.6
11	-355.6	-225.5	-72.5
12	-355.9	-325.1	-67.9
13	-353.1	-423.1	-63.5
14	-346.2	-522.7	-54.5
15	-329.3	-620.6	-46.6
16	-292.8	-712.9	-40.8
17	-245.7	-800.2	-36.5

Difference

Index	Xmm	Ymm	Zmm
1	-100.4	66.6	65.7
2	-61.9	58.0	68.5
3	-14.3	33.6	57.2
4	2.3	27.5	54.7
5	-5.0	27.2	52.7
6	-13.1	27.1	48.4
7	-31.8	24.9	43.6
8	-33.9	24.9	40.1
9	-33.5	24.8	36.3
10	-26.9	24.5	32.1
11	-26.7	24.4	29.0
12	-26.7	23.9	24.4
13	-29.1	22.6	19.7
14	-36.5	21.6	10.3
15	-53.3	19.0	2.1
16	-89.8	11.4	-4.4
17	-136.8	-0.9	-8.4

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Deformable Barrier Face Profile Cont'd.

Level C - Mid Level

Pre-Test

Index	Xmm	Ymm	Zmm
18	-381.0	799.4	-168.5
19	-381.0	699.4	-169.1
20	-381.3	598.6	-169.3
21	-381.4	498.4	-169.5
22	-381.6	398.5	-169.3
23	-382.0	299.0	-169.6
24	-382.2	198.9	-170.2
25	-381.7	98.7	-170.1
26	-382.0	-1.2	-170.9
27	-382.0	-101.4	-171.6
28	-382.3	-201.1	-171.7
29	-382.7	-302.4	-173.1
30	-382.6	-401.8	-172.0
31	-382.0	-501.9	-173.1
32	-382.9	-601.6	-173.4
33	-382.6	-702.4	-173.8
34	-383.1	-801.4	-173.7

Post-Test

Index	Xmm	Ymm	Zmm
18	-318.2	755.3	-220.4
19	-335.8	657.1	-225.5
20	-372.0	566.7	-224.8
21	-372.3	466.9	-222.7
22	-370.0	367.3	-219.3
23	-358.8	268.5	-215.9
24	-339.7	169.8	-211.9
25	-343.9	68.1	-207.8
26	-362.9	-30.8	-205.5
27	-368.7	-131.1	-201.8
28	-371.6	-231.5	-196.8
29	-368.5	-333.0	-192.7
30	-363.2	-433.2	-186.8
31	-354.2	-533.8	-181.1
32	-336.8	-632.6	-174.0
33	-309.3	-729.7	-166.7
34	-249.4	-807.5	-162.2

Difference

Index	Xmm	Ymm	Zmm
18	-62.8	44.1	51.9
19	-45.2	42.3	56.4
20	-9.3	31.9	55.4
21	-9.1	31.5	53.1
22	-11.6	31.2	49.9
23	-23.2	30.6	46.3
24	-42.5	29.1	41.7
25	-37.8	30.7	37.6
26	-19.1	29.6	34.5
27	-13.3	29.7	30.1
28	-10.7	30.5	25.1
29	-14.2	30.6	19.6
30	-19.4	31.4	14.8
31	-27.7	31.9	7.9
32	-46.2	31.0	0.6
33	-73.3	27.3	-7.1
34	-133.8	6.1	-11.5

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Deformable Barrier Face Profile Cont'd.

Level B - Top of Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
35	-381.6	799.1	-292.2
36	-382.0	698.8	-292.7
37	-381.8	599.4	-293.2
38	-382.0	499.1	-293.4
39	-382.1	398.6	-294.0
40	-382.4	298.8	-294.4
41	-382.8	199.3	-295.2
42	-383.1	98.7	-295.6
43	-383.3	-0.9	-295.7
44	-382.8	-100.5	-296.3
45	-382.8	-201.3	-296.9
46	-382.7	-300.3	-297.1
47	-382.9	-401.5	-297.8
48	-383.3	-501.6	-298.1
49	-383.6	-601.4	-299.5
50	-383.2	-701.4	-299.4
51	-383.5	-801.2	-299.5

Post-Test

Index	Xmm	Ymm	Zmm
35	-288.0	761.0	-323.2
36	-297.4	662.2	-308.8
37	-302.8	561.2	-311.8
38	-311.6	466.3	-312.8
39	-312.9	365.0	-311.1
40	-319.6	263.0	-309.2
41	-324.3	164.0	-312.9
42	-330.2	63.1	-317.2
43	-334.3	-34.7	-317.1
44	-335.9	-138.9	-315.5
45	-336.1	-238.5	-309.3
46	-332.0	-336.7	-305.1
47	-327.1	-437.6	-300.9
48	-320.4	-537.9	-297.0
49	-307.6	-637.3	-293.4
50	-288.2	-735.4	-286.0
51	-261.4	-827.9	-284.4

Difference

Index	Xmm	Ymm	Zmm
35	-93.6	38.1	30.9
36	-84.6	36.6	16.1
37	-79.0	38.2	18.6
38	-70.5	32.9	19.4
39	-69.2	33.6	17.1
40	-62.7	35.8	14.9
41	-58.5	35.4	17.7
42	-53.0	35.6	21.6
43	-49.0	33.8	21.5
44	-46.9	38.4	19.1
45	-46.7	37.1	12.3
46	-50.7	36.3	7.9
47	-55.9	36.1	3.1
48	-62.9	36.4	-1.1
49	-75.9	35.8	-6.0
50	-95.0	34.0	-13.3
51	-122.1	26.7	-15.1

Data Sheet 12 (Continued)

Exterior Static Crush For Impactor Face

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

Deformable Barrier Face Profile Cont'd.

Level A - Mid Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
52	-476.0	794.0	-420.3
53	-485.0	696.2	-421.7
54	-485.2	596.3	-421.7
55	-485.4	496.7	-421.7
56	-485.6	396.4	-422.0
57	-485.7	297.0	-422.3
58	-485.9	196.2	-422.9
59	-486.1	96.0	-423.1
60	-486.4	-3.6	-424.0
61	-486.4	-103.3	-424.0
62	-486.5	-202.9	-424.2
63	-486.5	-304.2	-424.7
64	-486.6	-403.6	-424.5
65	-486.6	-503.7	-425.2
66	-486.6	-603.7	-425.3
67	-486.7	-703.3	-425.4
68	-473.3	-801.3	-425.7

Post-Test

Index	Xmm	Ymm	Zmm
52	-268.7	746.4	-441.7
53	-286.0	649.3	-444.4
54	-307.0	552.0	-447.7
55	-329.1	455.2	-452.5
56	-342.2	355.2	-453.3
57	-343.3	256.1	-448.4
58	-349.2	155.9	-445.9
59	-360.7	56.3	-445.8
60	-371.2	-42.9	-446.2
61	-381.6	-142.2	-445.9
62	-387.1	-241.5	-443.8
63	-386.9	-342.6	-440.8
64	-385.6	-442.1	-436.7
65	-379.3	-541.7	-432.3
66	-364.5	-640.8	-426.2
67	-341.9	-737.5	-420.0
68	-306.6	-830.5	-414.0

Difference

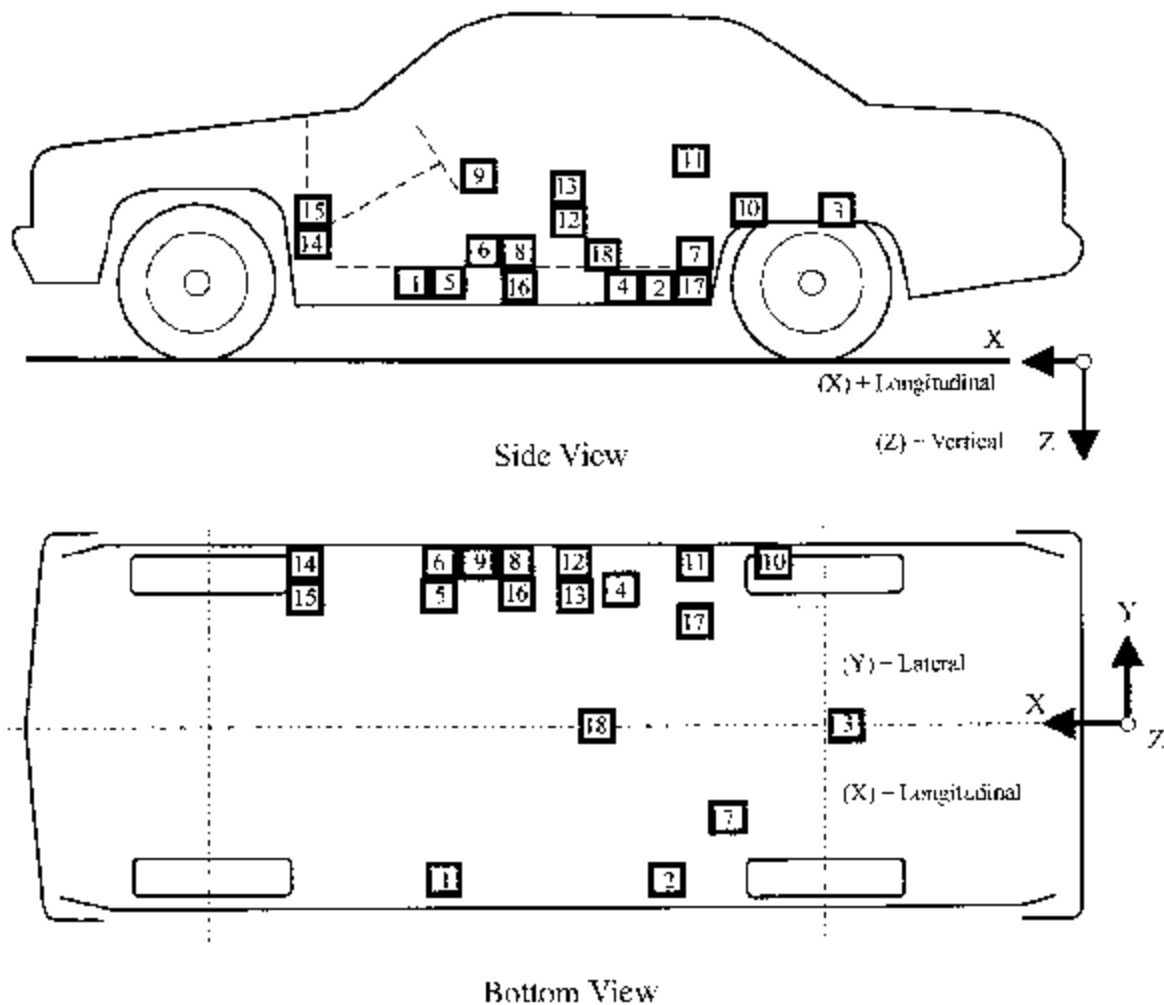
Index	Xmm	Ymm	Zmm
52	-207.2	47.7	21.4
53	-199.0	46.8	22.7
54	-178.3	44.3	26.0
55	-156.4	41.5	30.8
56	-143.5	41.2	31.2
57	-142.4	40.9	26.2
58	-136.7	40.3	23.0
59	-125.4	39.7	22.7
60	-115.1	39.3	22.1
61	-104.8	38.9	21.9
62	-99.4	38.6	19.6
63	-99.6	38.4	16.1
64	-101.0	38.6	12.2
65	-107.4	38.0	7.1
66	-122.1	37.1	0.9
67	-144.7	34.2	-5.4
68	-166.8	29.2	-11.7

Data Sheet 13

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



- | | |
|------------------------------------|--|
| 1-Right Front Side Sill | 10-Left Rear Door Mid Rear |
| 2-Right Side Sill at Rear Seat | 11-Left Rear Door Upper Centerline |
| 3-Rear Floorpan above Axle | 12-Left Side Lower B-pillar |
| 4-Left Side Sill at Rear Seat | 13-Left Side Middle B-pillar |
| 5-Left Front Side Sill | 14-Left Side Lower A-pillar |
| 6-Left Front Door on Centerline | 15-Left Side Middle A-pillar |
| 7-Right Rear Occupant Compartment | 16-Left Side Front Seat Track at H-point |
| 8-Left Front Door Mid Rear | 17-Left Rear Seat Track at H-point |
| 9-Left Front Door Upper Centerline | 18-Vehicle Center of Gravity |

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

TEST NUMBER: 030415				POSITIVE	Negative
No. LOCATION	X	Y	Z	DIRECTION	DIRECTION
1 RIGHT SIDE SILL AT FRONT SEAT	2845 mm	660 mm	-250 mm		
LONGITUDINAL				@ 54.9 ms	@ 12.2 ms
LATERAL				@ 7.4 ms	@ 139.7 ms
VERTICAL				@ 65.8 ms	@ 9.9 ms
RESULTANT				@ 7.5 ms	
2 RIGHT SIDE SILL AT REAR SEAT	1955 mm	655 mm	-285 mm		
LONGITUDINAL				@ 61.0 ms	@ 11.8 ms
LATERAL				@ 7.5 ms	@ 139.6 ms
VERTICAL				@ 28.4 ms	@ 9.8 ms
RESULTANT				@ 7.6 ms	
3 REAR FLAORPAN ABOVE AXLE	1103 mm	0 mm	-574 mm		
LONGITUDINAL				@ 15.5 ms	@ 10.9 ms
LATERAL				@ 7.8 ms	@ 99.8 ms
VERTICAL				@ 9.8 ms	@ 6.5 ms
RESULTANT				@ 7.9 ms	
4 LEFT SIDE SILL AT REAR SEAT	2000 mm	-670 mm	-284 mm		
LATERAL					
5 LEFT SIDE SILL AT FRONT SEAT	2930 mm	-660 mm	-278 mm		
LATERAL				@ 3.9 ms	@ 32.6 ms
				49.6 g	12.4 g

Data Sheet 13 (Continued)

Test Vehicle Accelerometer Locations and Data Summary

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

TEST NUMBER: No. LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION
8 LEFT FRONT DOOR ON CENTERLINE LATERAL	2705 mm	-696 mm	570 mm	---	---
7 RIGHT REAR OCCUPANT COMPARTMENT LATERAL	1870 mm	485 mm	-304 mm	---	---
8 LEFT FRONT DOOR MIDREAR LATERAL	2420 mm	-705 mm	-565 mm	---	---
9 LEFT FRONT DOOR UPPER CENTERLINE LATERAL	2705 mm	-695 mm	-780 mm	---	---
10 LEFT REAR DOOR MIDREAR LATERAL	1510 mm	-695 mm	-630 mm	---	---
11 LEFT REAR DOOR UPPER CENTERLINE LATERAL	1865 mm	-685 mm	-835 mm	---	---
12 LEFT LOWER R-POST LATERAL	2205 mm	-692 mm	-540 mm	---	---
				27.9 g @ 7.3 ms @ 139.0 ms	2.1 g @ 31.0 ms
				135.3 g @ 6.5 ms	37.5 g @ 31.0 ms
				206.9 g @ 6.2 ms	134.3 g @ 10.4 ms
				181.0 g @ 14.6 ms	85.8 g @ 32.6 ms
				96.0 g @ 4.5 ms	32.8 g @ 31.8 ms

Test Vehicle Accelerometer Locations and Data Summary

NL11SA No.: C35504

TEST NUMBER: 0306415									
NO.	LOCATION	X	Y	Z	POSITIVE DIRECTION	NEGATIVE DIRECTION			
13	LEFT MIDDLE R-POST LATERAL	2205 mm	-692 mm	680 mm	125.5 g @ 4.5 ms	32.3 g @ 29.8 ms			
14	LEFT LOWER A-POST LATERAL	3195 mm	-680 mm	-555 mm	---	---			
15	LEFT MIDDLE A-POST LATERAL	3195 mm	-690 mm	-703 mm	---	---			
16	LEFT FRONT SEAT TRACK LATERAL	2490 mm	-555 mm	-307 mm	34.7 g @ 4.8 ms	11.0 g @ 51.7 ms			
17	LEFT REAR SEAT TRACK LATERAL	1640 mm	-650 mm	-398 mm	---	---			
18	VEHICLE CENTER OF GRAVITY LONGITUDINAL LATERAL VERTICAL RESULTANT	2009 mm	0 mm	-465 mm	8.8 g @ 21.4 ms	21.9 g @ 30.6 ms			
					90.2 g @ 21.4 ms	43.3 g @ 33.2 ms			
					47.3 g @ 24.6 ms	32.2 g @ 19.4 ms			
					91.8 g @ 21.3 ms				

REFERENCE: X: + FORWARD FROM REAR BUMPER

Y: 1 RIGHTWARD FROM VEHICLE CENTERLINE

Z: 1 MOUNTAIN VIEW GROUND LEVEL

For acceleration data sign convention, see Report Sign Convention in Appendix D.

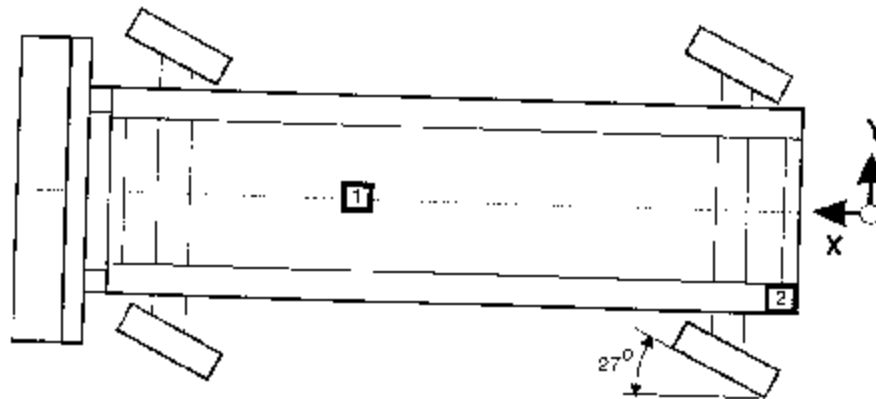
1 See DATA ACQUISITION EXPLANATIONS

Data Sheet 14

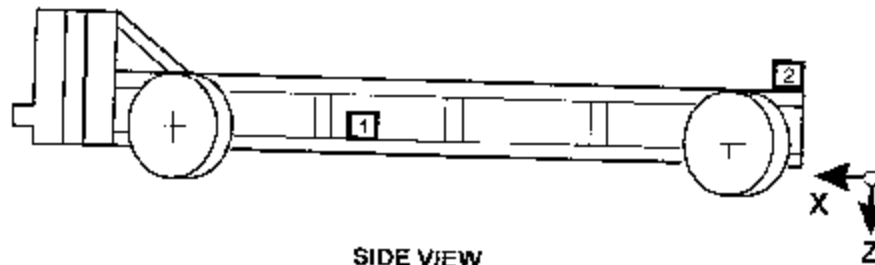
MDB Accelerometer Locations and Data Summary

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504



TOP VIEW



SIDE VIEW

Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	MDB Center of Gravity	1855	0	-520				
	Longitudinal X				3.5	-11.2	-22.2	39.9
	Lateral Y				2.6	-11.3	-8.5	34.4
	Vertical Z				6.0	113.3	-5.8	103.5
	Resultant R				22.9	45.8		
2	Rear Frame Member	412	-677	-625				
	Longitudinal X				3.0	120.2	-25.1	36.0
	Lateral Y				3.5	29.8	-3.1	59.0

*Reference: X = Rear Bumper (+ Forward)

Y = Vehicle Centerline (+ To Right)

Z = Ground Level (- Down)

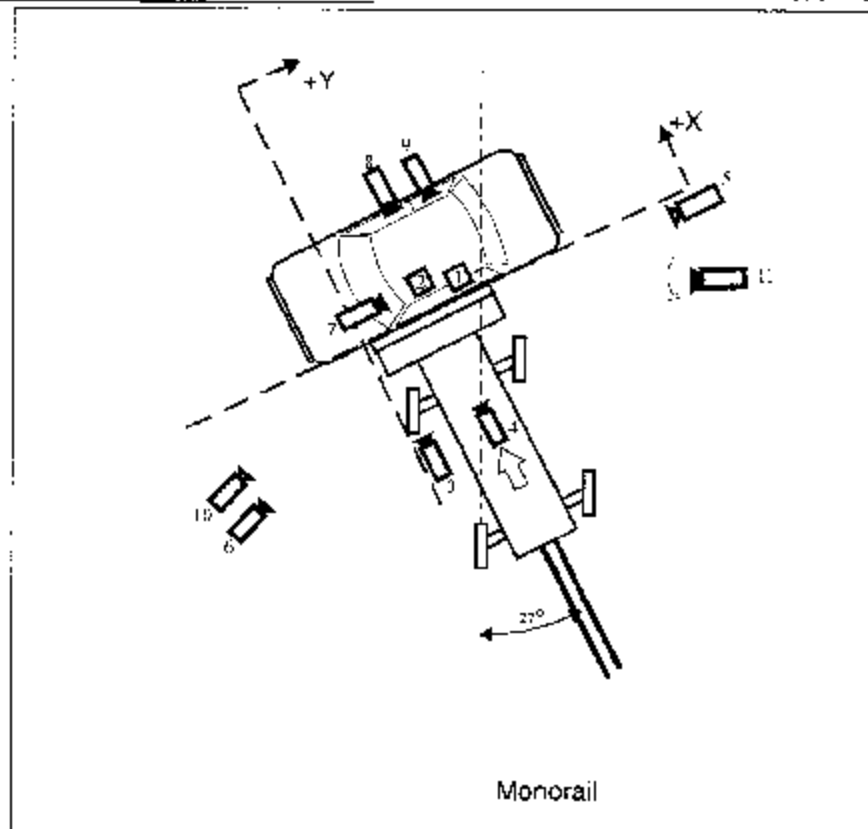
All measurements accurate to within ± 3 mm.

Data Sheet 15

High-Speed Camera Locations and Data Summary

Vehicle: 2003 Subaru Legacy 4-door sedan

NITSA No.: C35504



Camera Number	Location	Location, mm			Lens		Speed (fps)
		X	Y	Z	(deg)	(mm)	
1	Overhead wide	250	2150	-5750	-76.2	8.5	340
2	Overhead tight	370	1800	-5750	-85.0	17	1010
3	Onboard MDB left side	-1750	-40	-720	-0.3	13	1025
4	Onboard MDB center	-2480	830	-1353	-4.6	13	1000
5	Right side of MDB	330	11760	-1000	-1.1	13	1000
6	Left side of MDB	-2690	-5760	-940	-2.4	13	1000
7	Onboard vehicle front	530	-550	-1163	-1.7	8	1010
8	Onboard side front door	1670	760	-1012	-2.8	8	300
9	Onboard side rear door	1610	1620	-1032	-4.2	8	N/A ¹
10	Digital overall event	-1624	-6090	-1120	-2.0	13	1000
11	Real-time Panning-Video	N/A	N/A	N/A	N/A	Zoom	30

-X: Forward (referenced to MDB) from impact point

-Y: Rightward (referenced to MDB) from impact point

-Z: Downward from ground level

¹ Unable to determine actual speed, no LEDs in view.

Section 5

Vehicle Fuel System Integrity

Data Sheet 16

FMVSS 301 Fuel System Integrity Data

NHTSA No.: C35504

Test Date: 04/15/03

Vehicle Year/Make/Model/Body Style: 2003 Subaru Legacy 4-door sedan

Test Vehicle Impact Type :

☐ Frontal (48.28 km/h)
☐ Oblique (48.28 km/h) with ____° barrier
face first contacting the (driver/passenger) side
☐ Rear Moving Barrier (48.28 km/h)
☐ Lateral Moving Barrier (32.19 km/h)
☒ Side Impact Moving Deformable Barrier
(38.5) contacting the driver side

Fuel Spillage Measurement:

1. From impact until vehicle motion ceases
2. For five-minute period after vehicle motion ceases
3. For next 25 minutes.

Actual	Maximum Allowed
0 g	28 g
0 g	142 g
0 g	28 g/1 minute

Solvent Spillage Details :

N/A

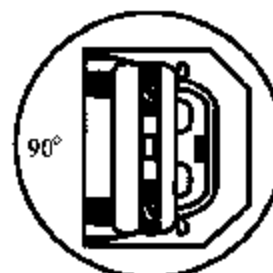
Data Sheet 17

FMVSS 301 Rollover Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

0 - 90 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
 (Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time 5 minutes 0 seconds

Total 6 minutes 30 seconds

Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

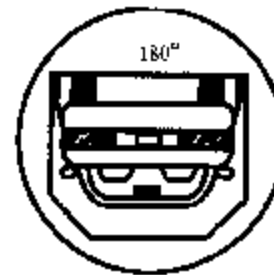
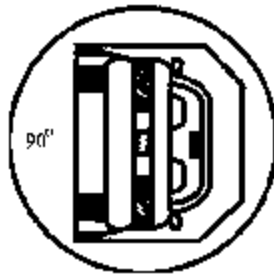
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

90 - 180 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
Total 6 minutes 30 seconds
Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

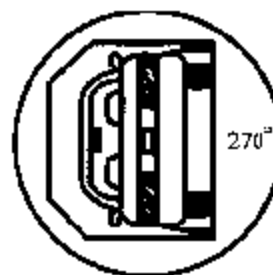
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

180 - 270 Degrees



1. Determination of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds
(Spec. Range = 1 to 3 minutes)
FMVSS 301 Position Hold Time + 5 minutes 0 seconds
Total 6 minutes 30 seconds
Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

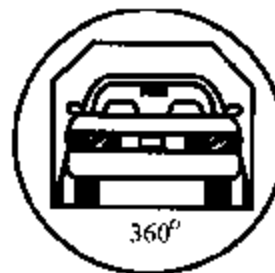
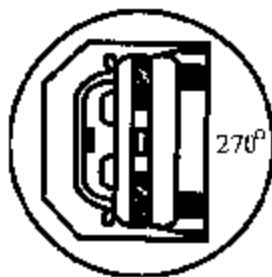
Data Sheet 17 (Continued)

FMVSS 301 Rollover Data

Vehicle: 2003 Subaru Legacy 4-door sedan

NHTSA No.: C35504

270 - 360 Degrees



1. Determination Of Solvent Collection Time Period:

Rollover Fixture 90° Rotation Time 1 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time — 5 minutes 0 seconds

Total 6 minutes 30 seconds

Next whole minute interval 7 minutes

2. FMVSS 301 Requirements:

(1) Time Period

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

3. Actual Test Vehicle Solvent Spillage:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

4. Solvent Spillage Location(s):

None

Appendix A

Photographs

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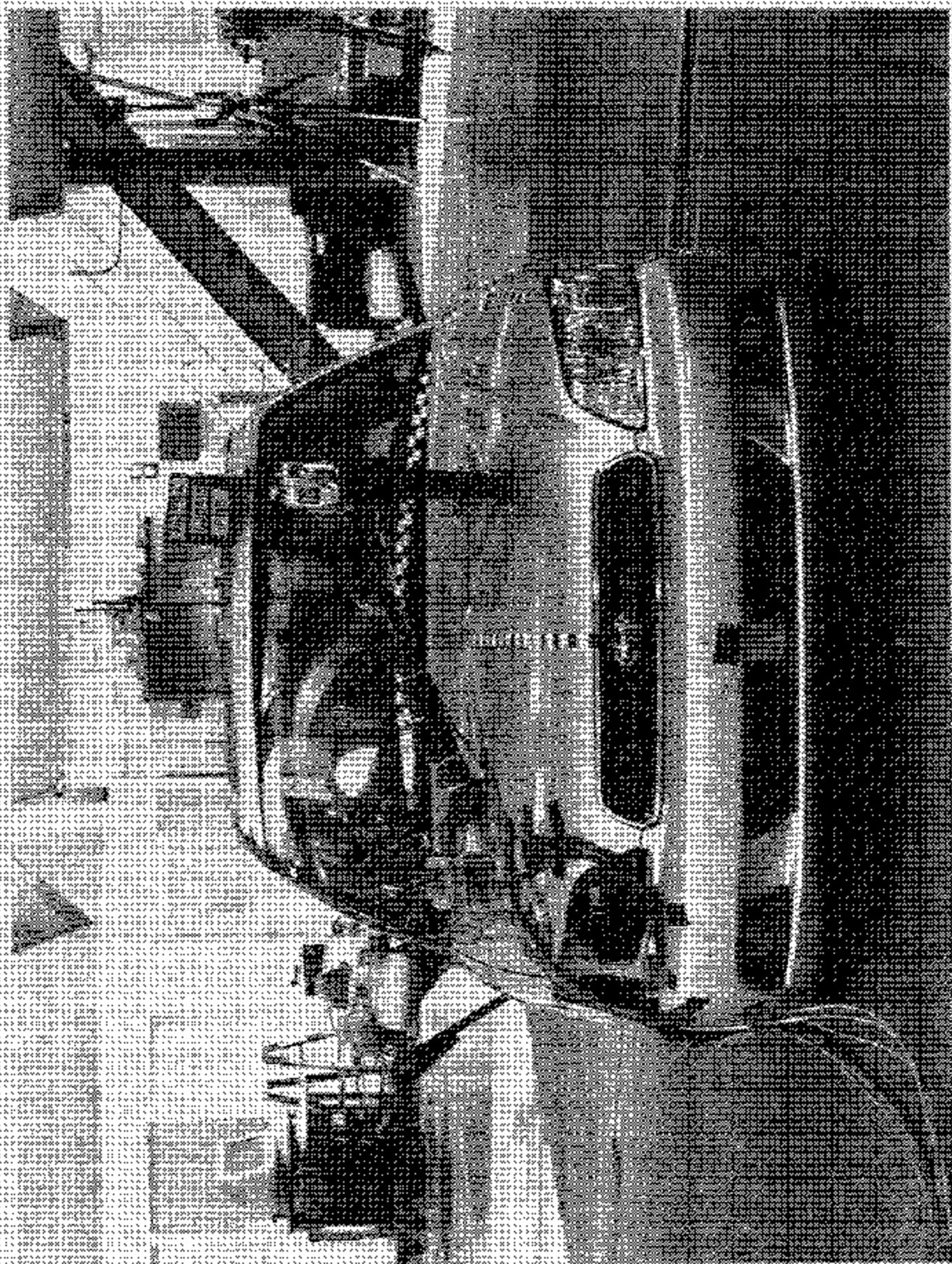


Figure A-4 Pre-Test Front View of Test Vehicle

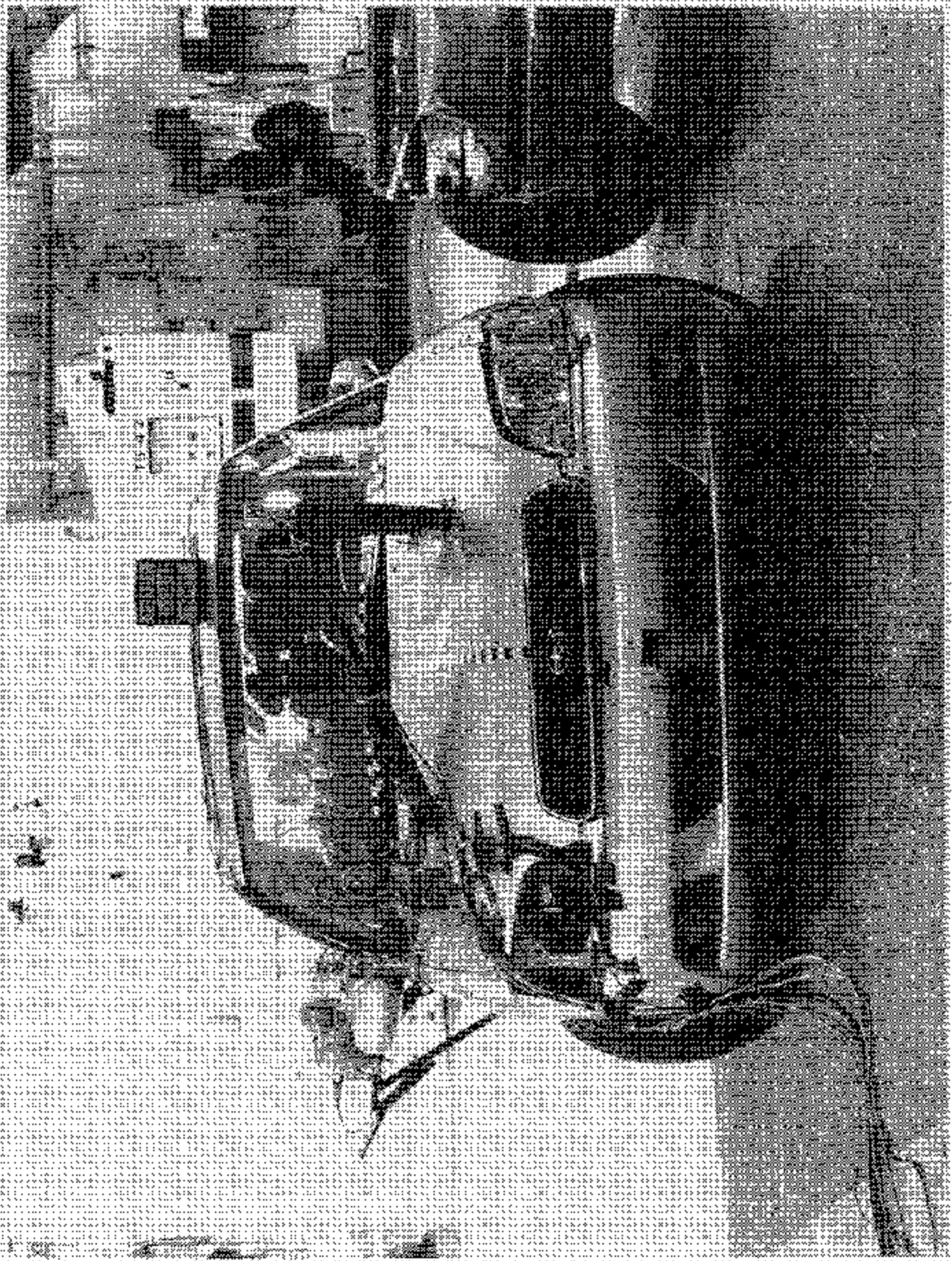


Figure A-2. Post-Test Front View of Test Vehicle

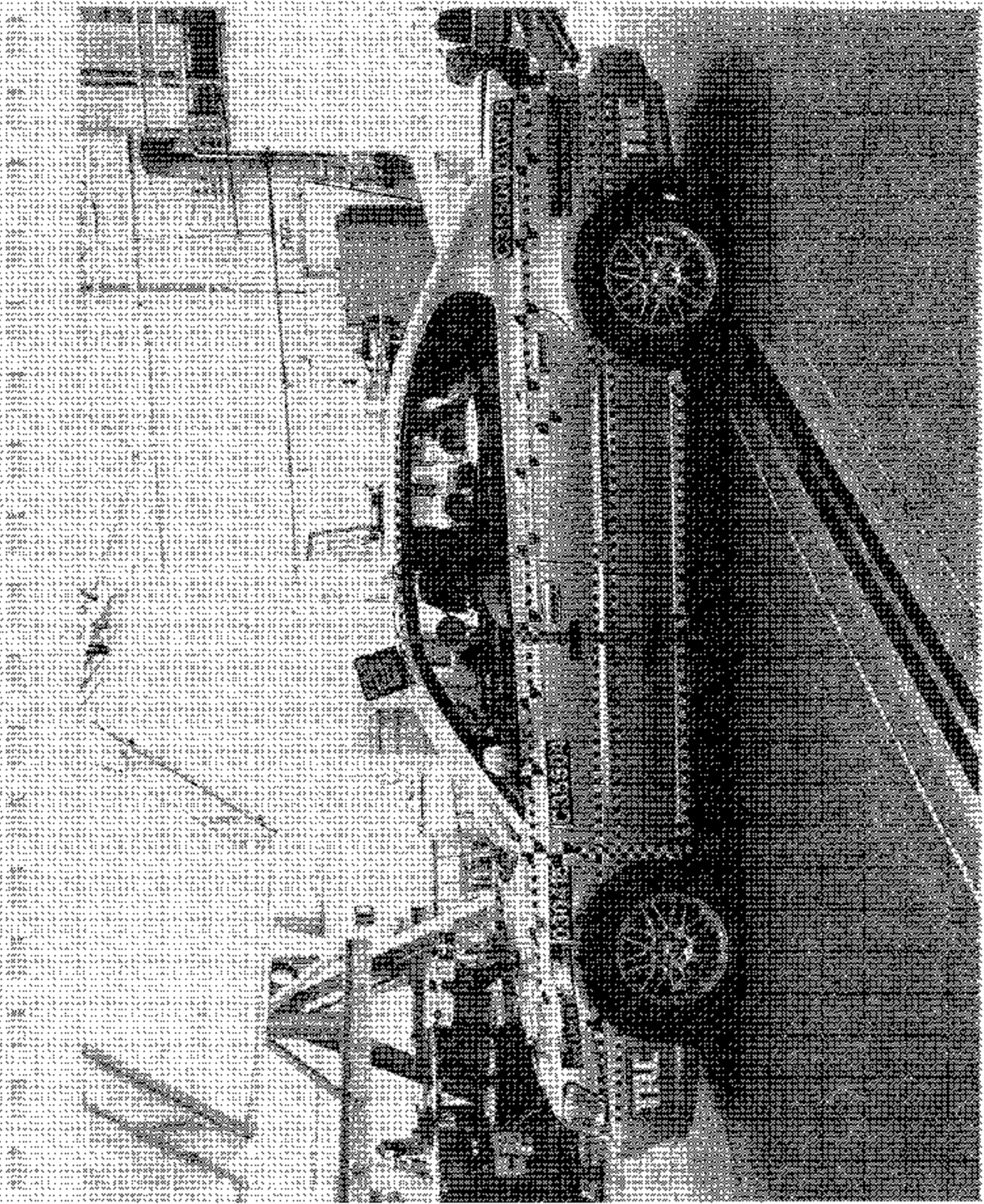


Figure A-3 Pre-Test Impacted Side View of Test Vehicle

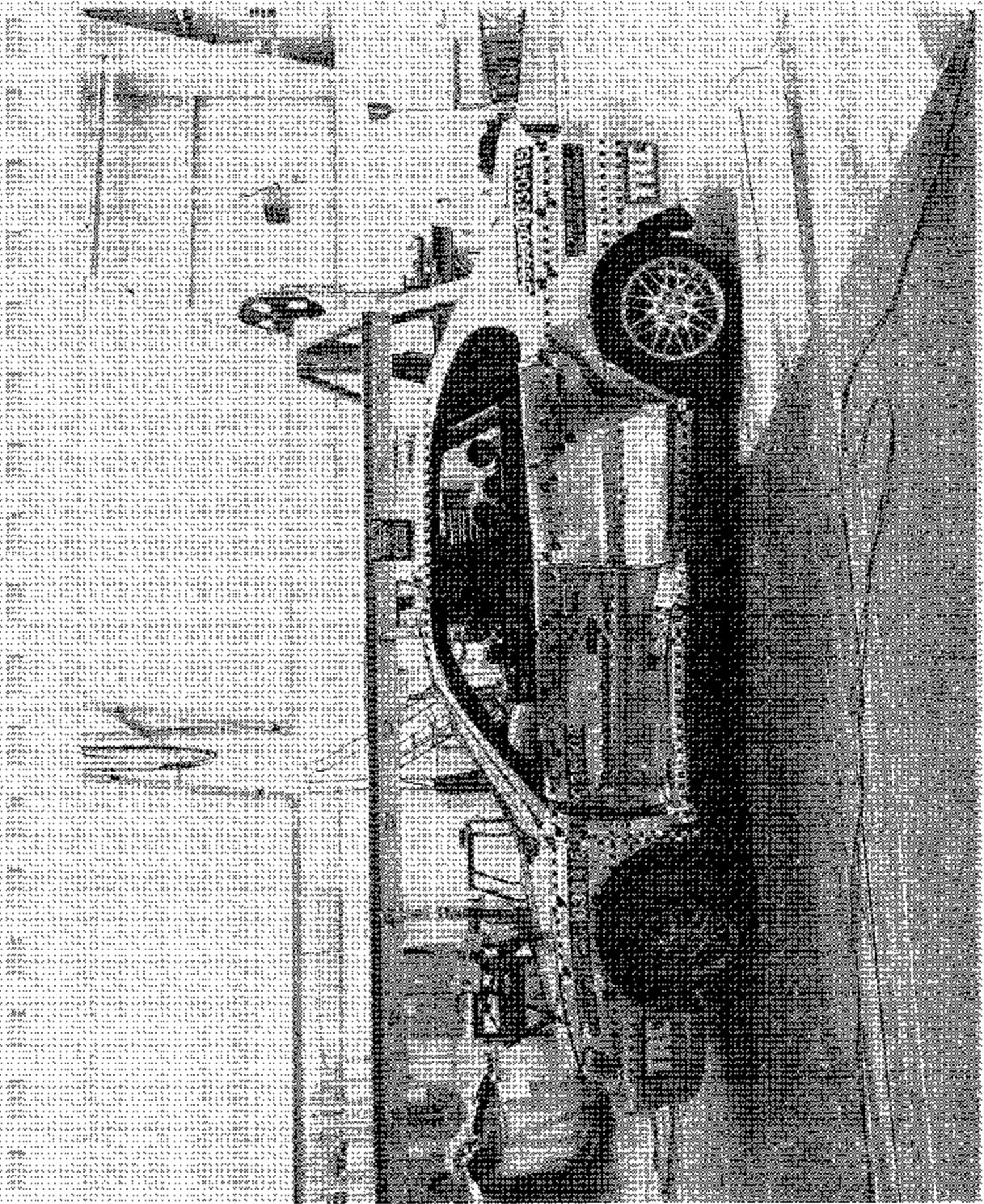


Figure A-4. Post-Test Impacted Side View of Test Vehicle

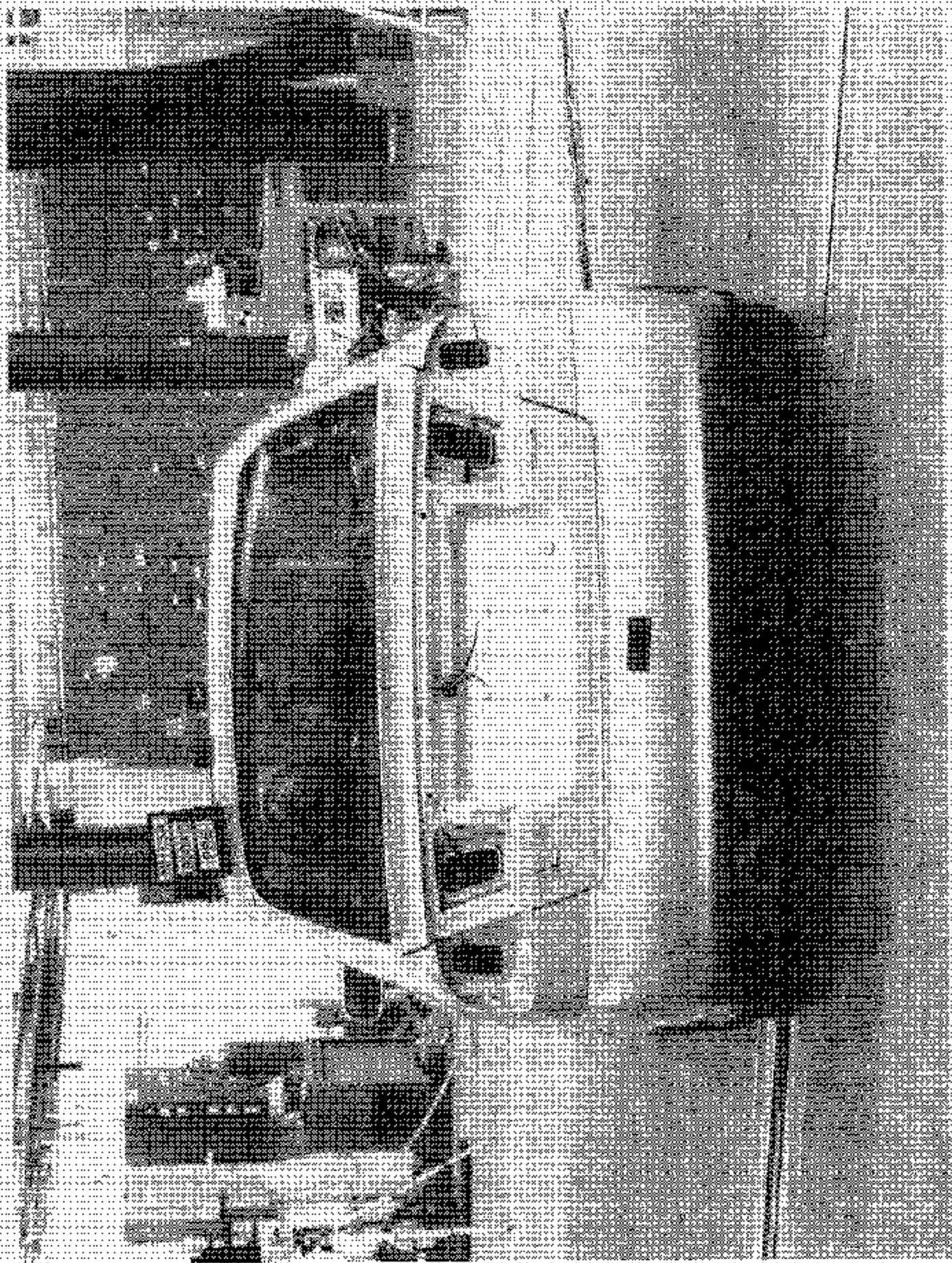


Figure A-5 Pre-Test View of Test Vehicle

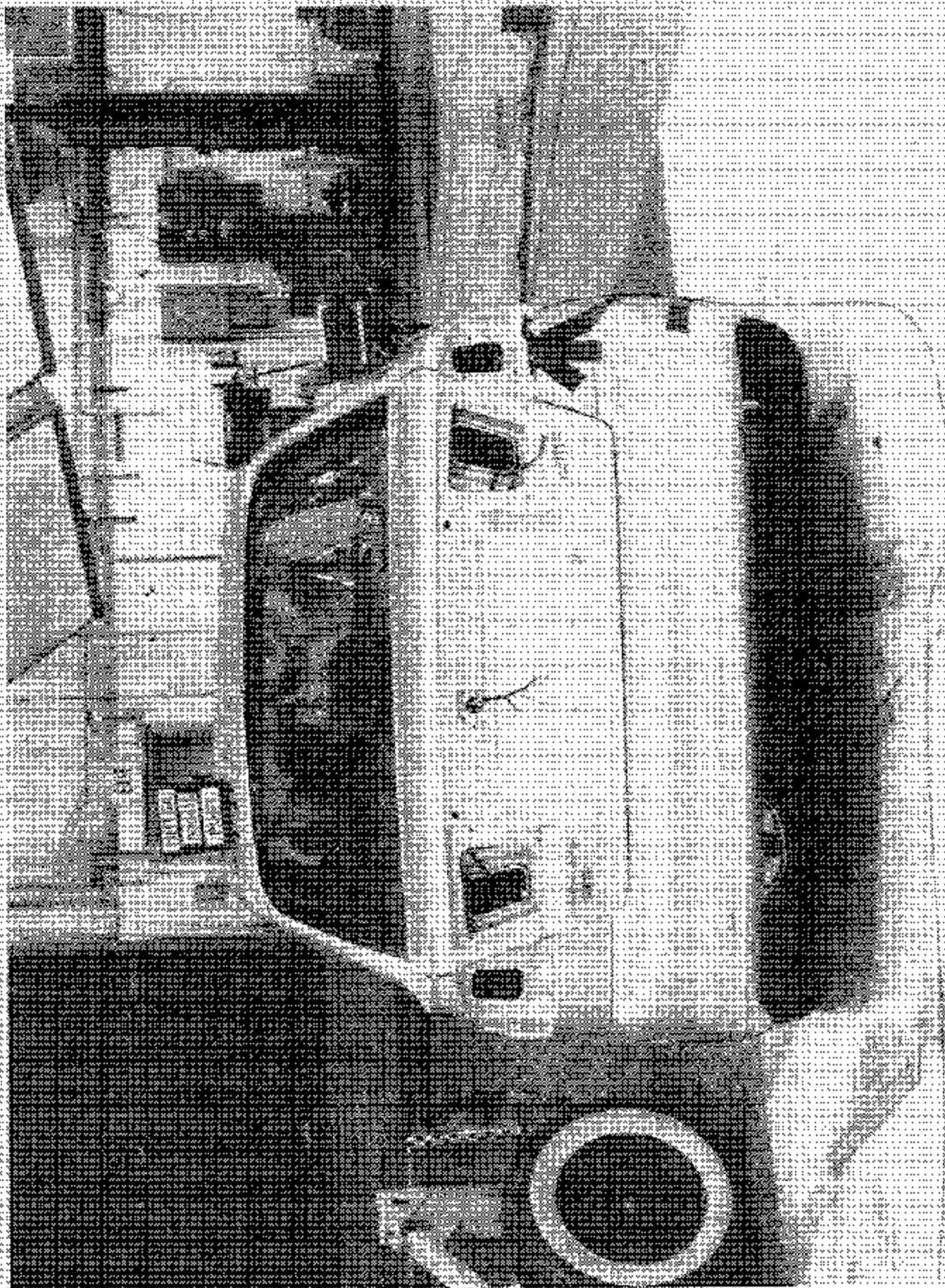


Figure A-6 Post-Test Rear View of Test Vehicle

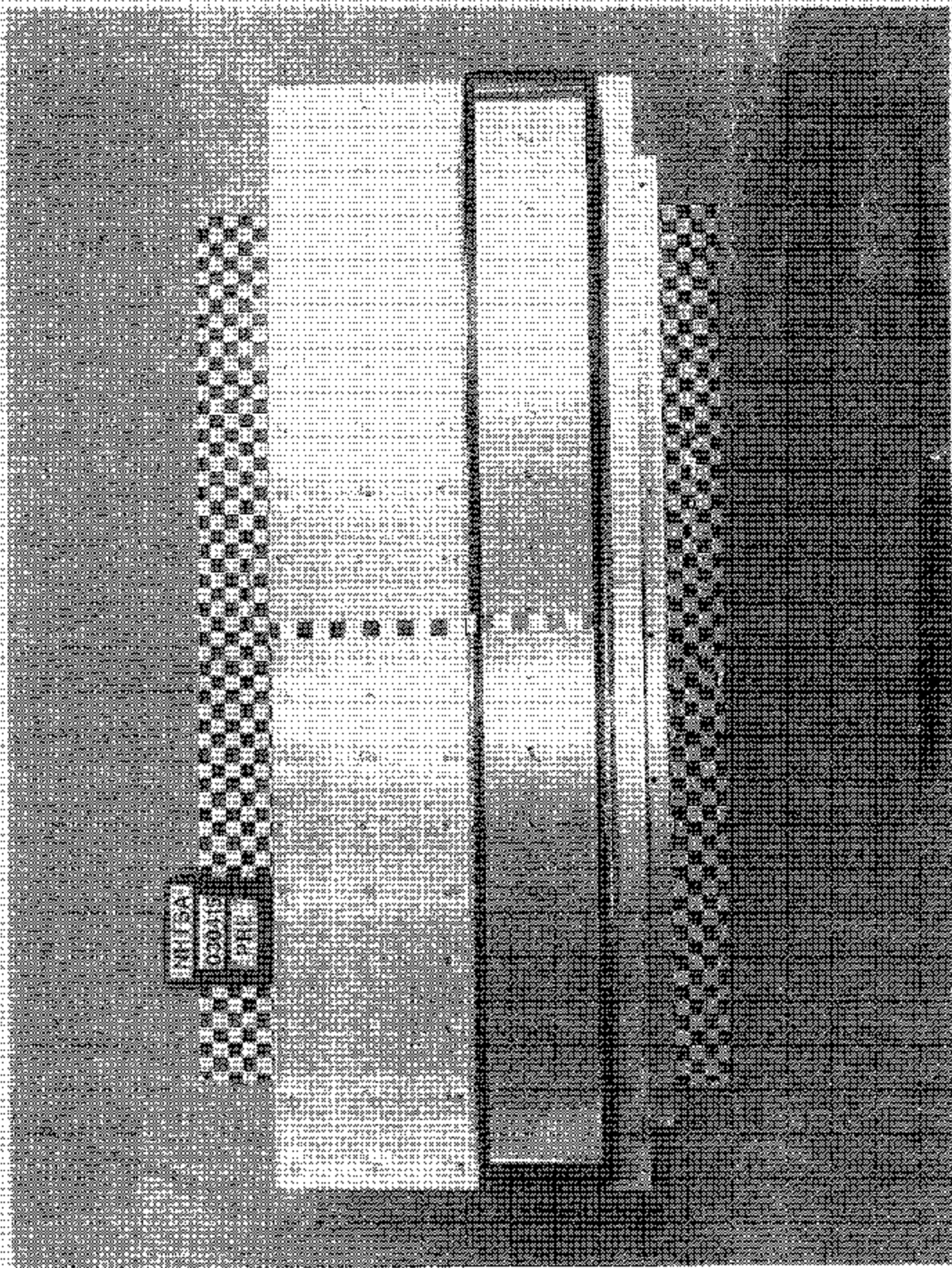


Figure A-7 Pre-Test Frontal View of Impactor Face

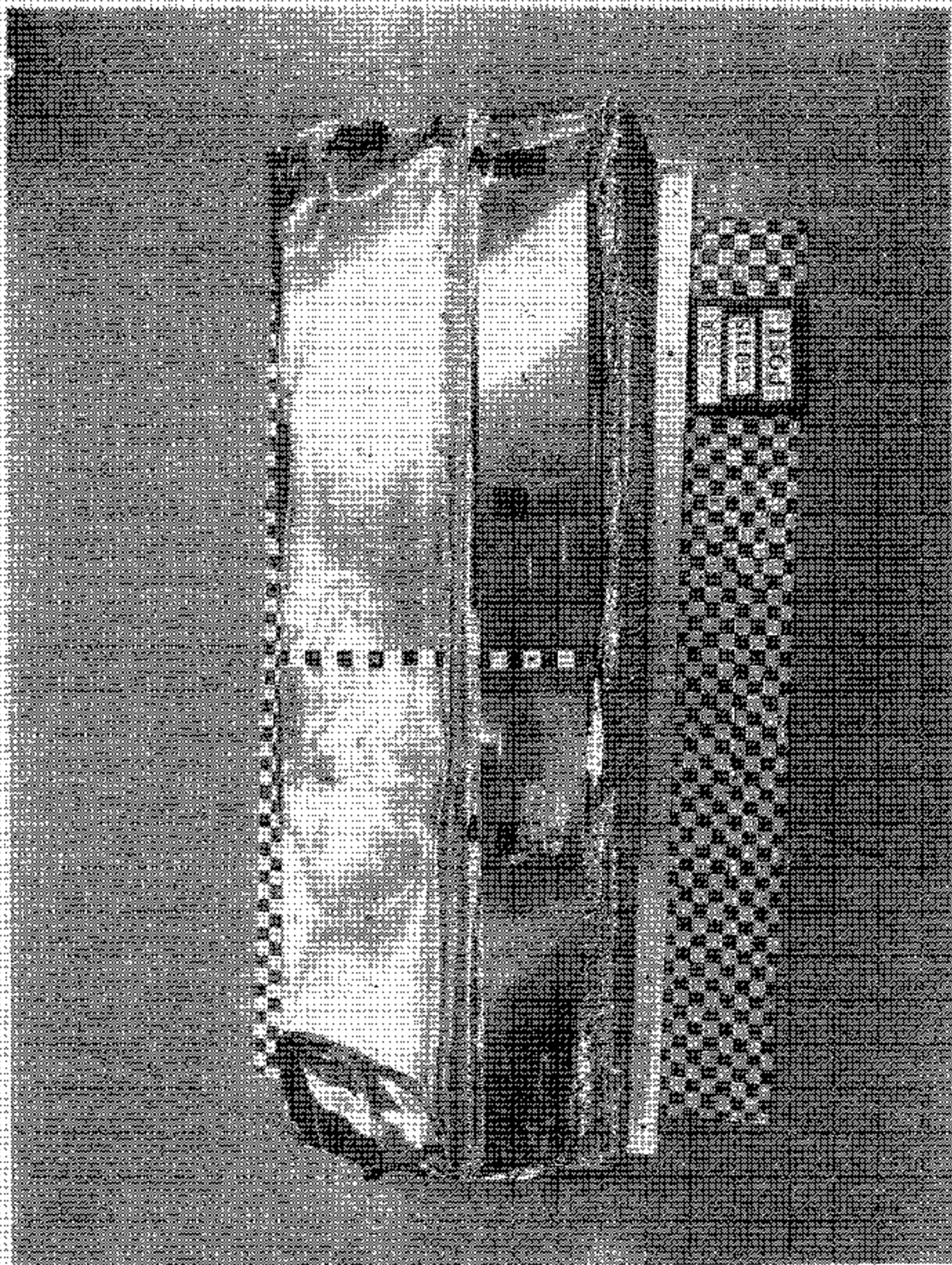


Figure A-8 Post-Test Frontal View of Impactor Face

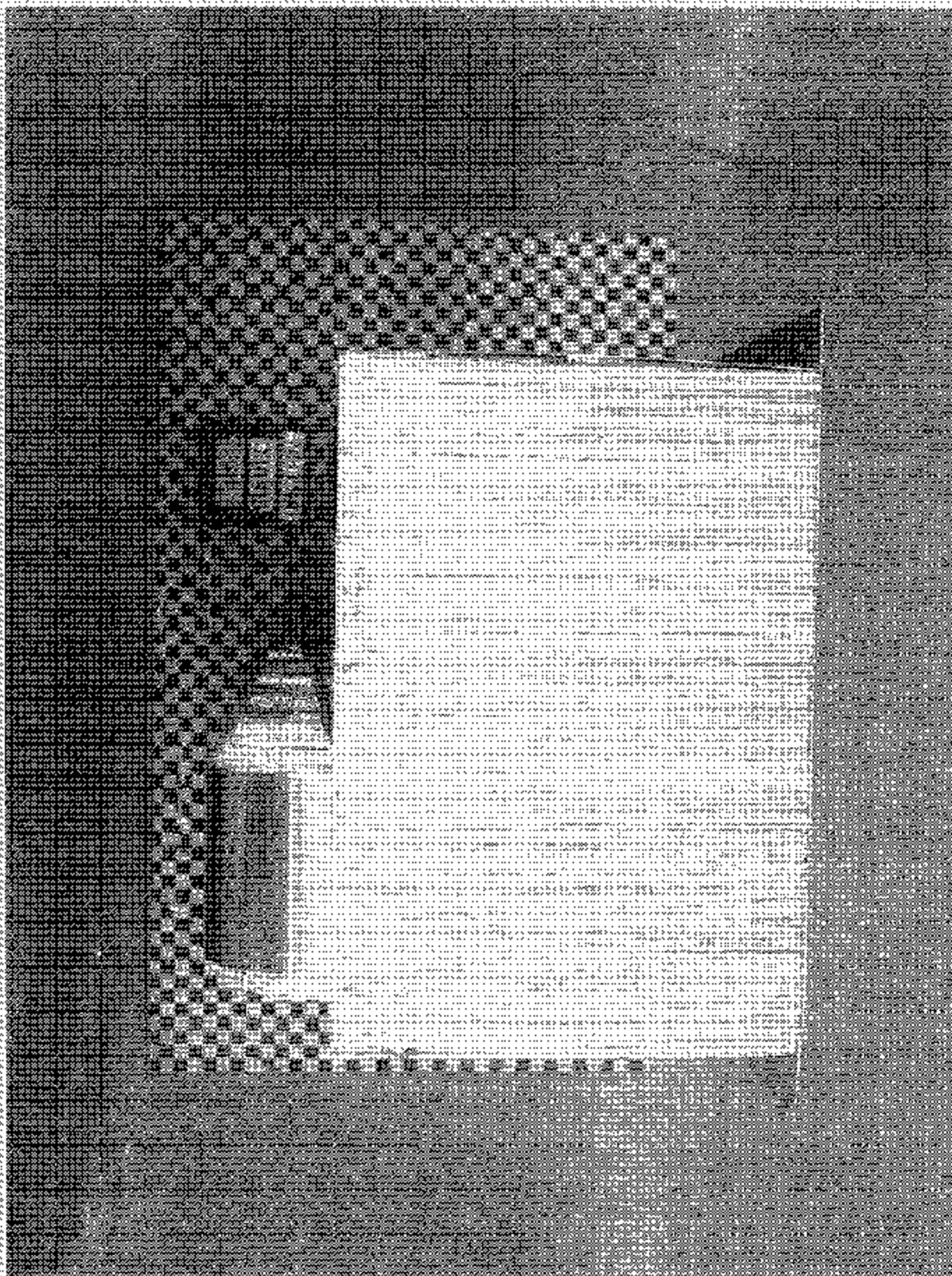


Figure A-9 Pre-Test Left Side View of Impactor Face

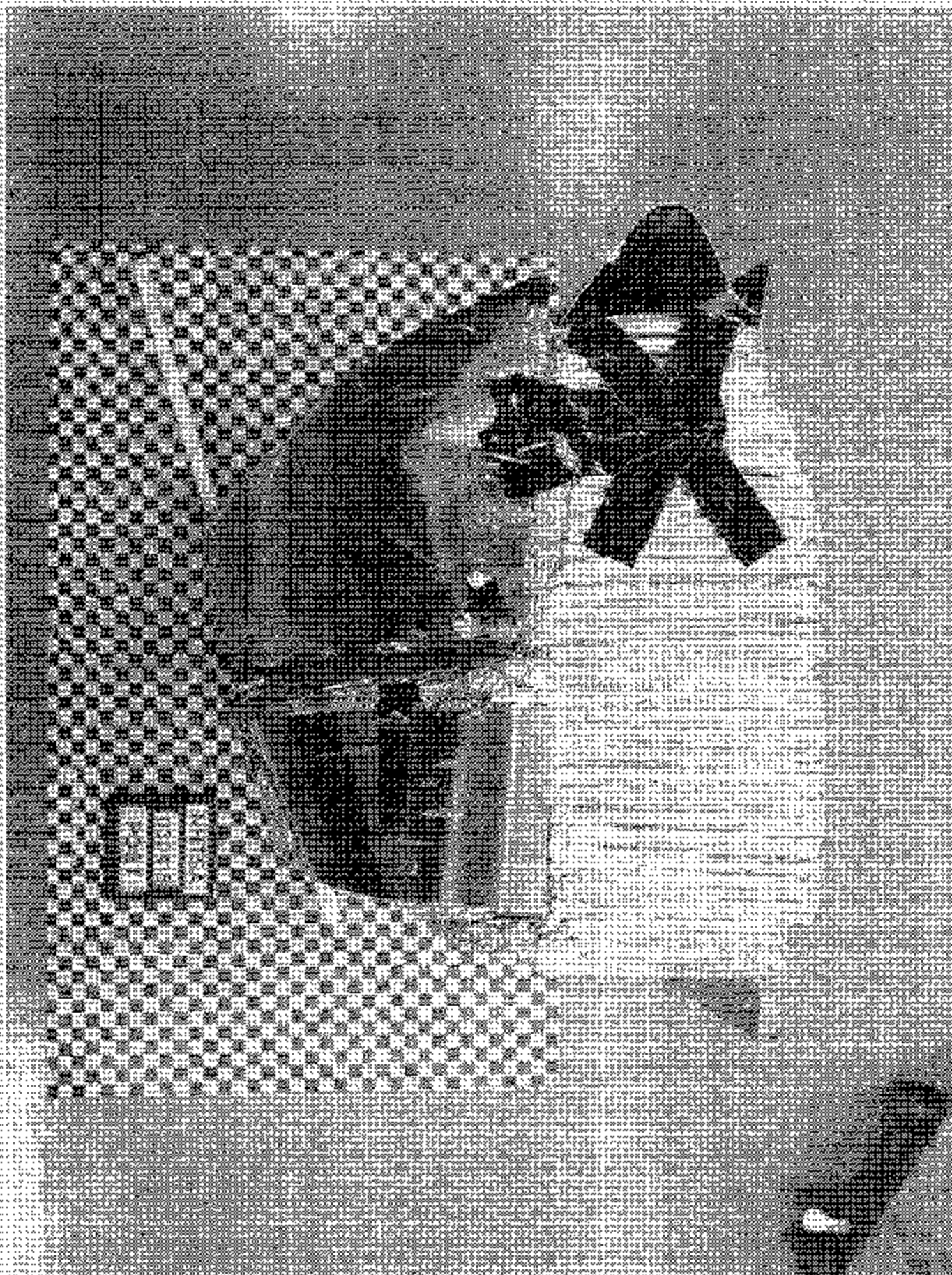


Figure A-10 Post-Test Left Side View of Impactor Parc

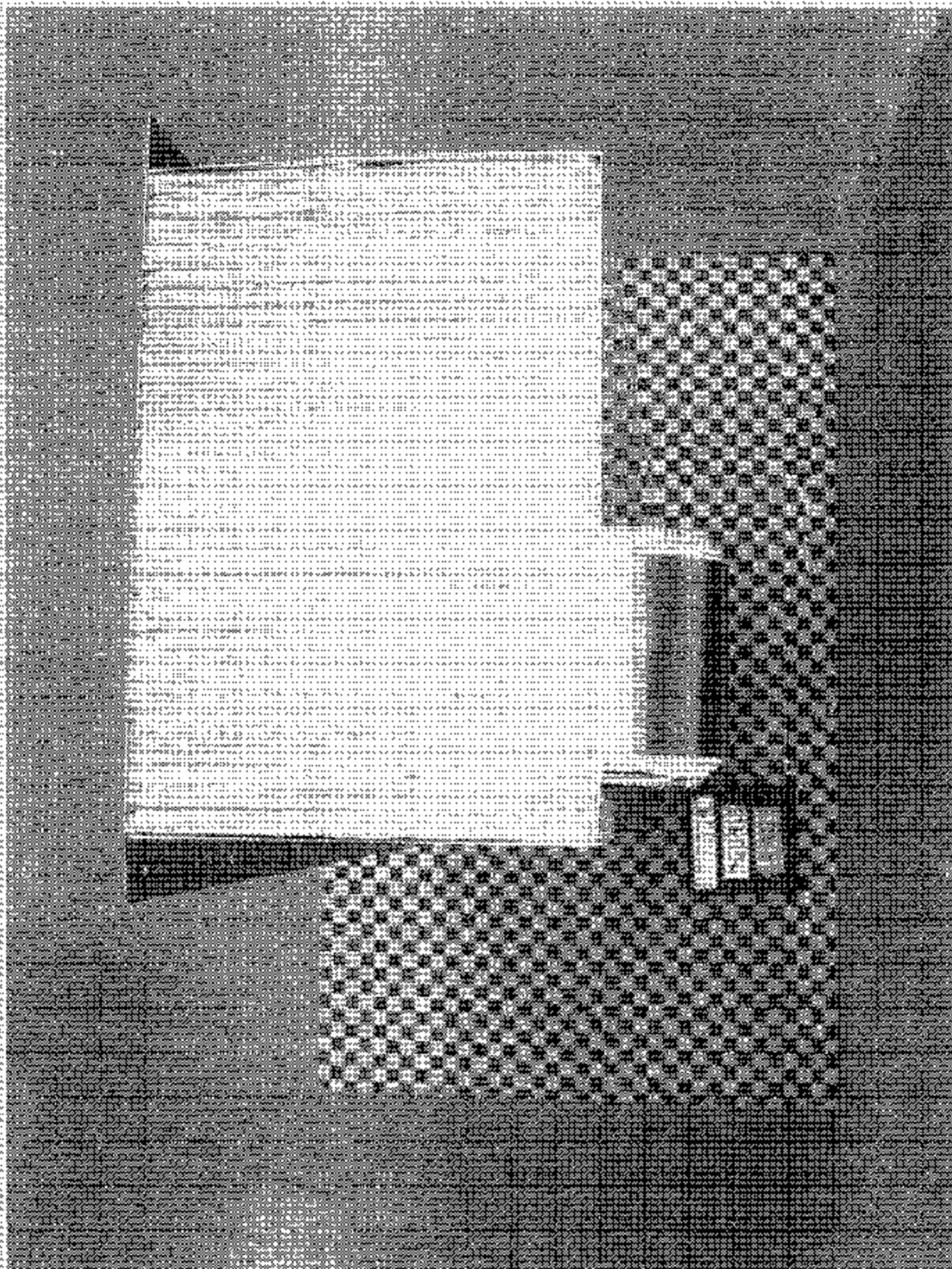


Figure A-11. Pre-Test Right Side View of Impactor Face

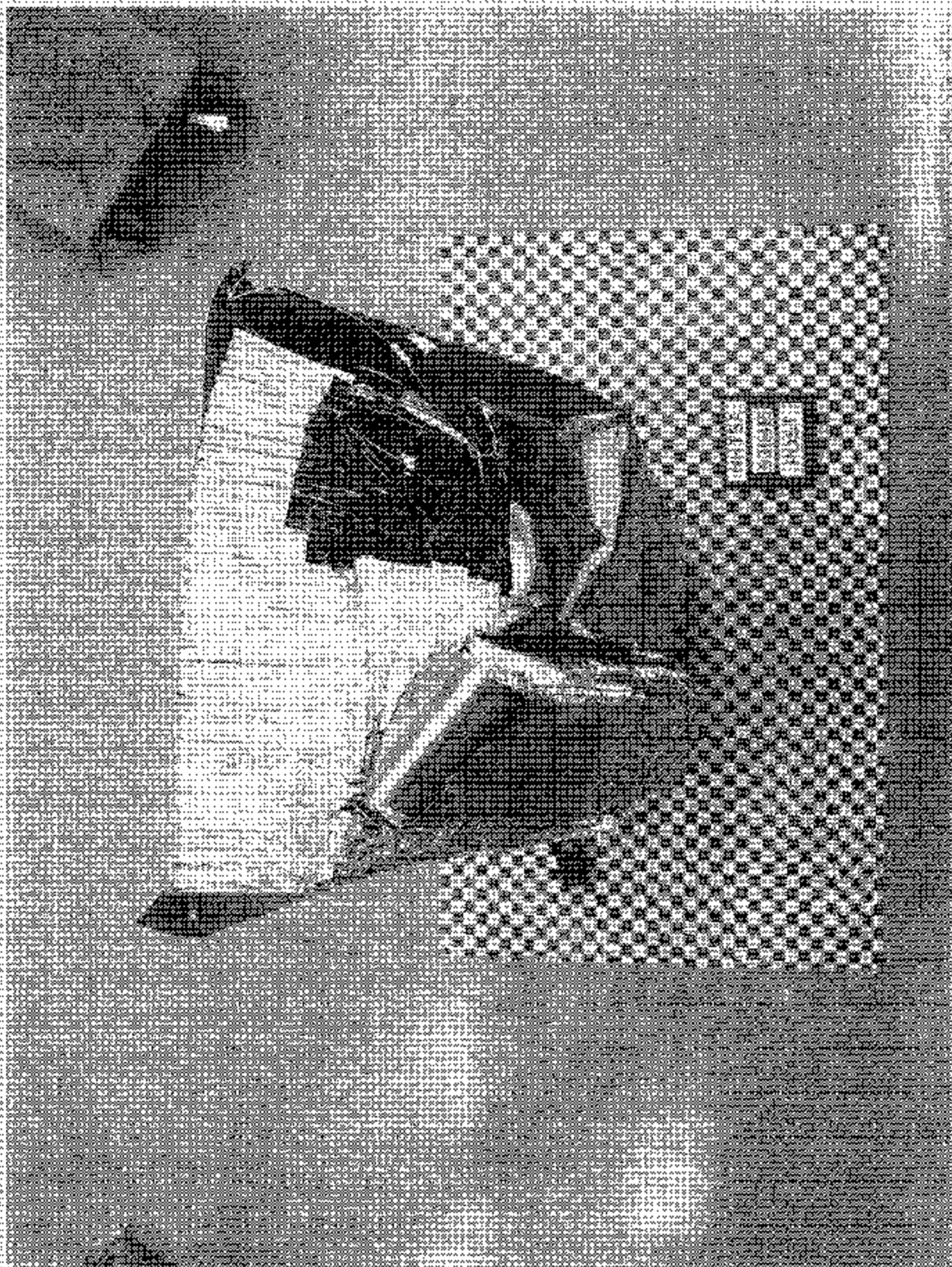


Figure A-12 Post-Test Right Side View of Impactor Face

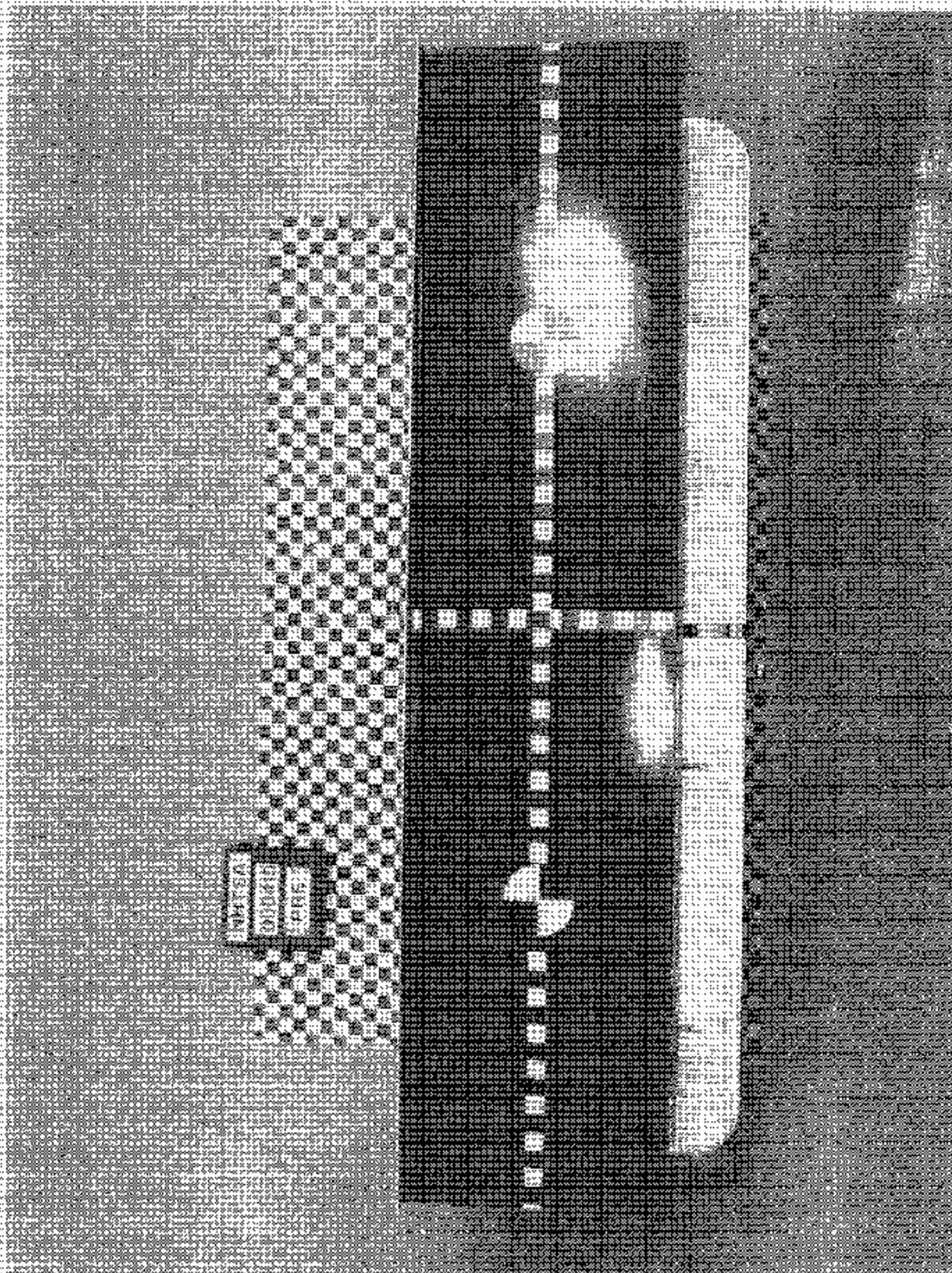


Figure A-15 Pre-Test Top View of Impactor Face

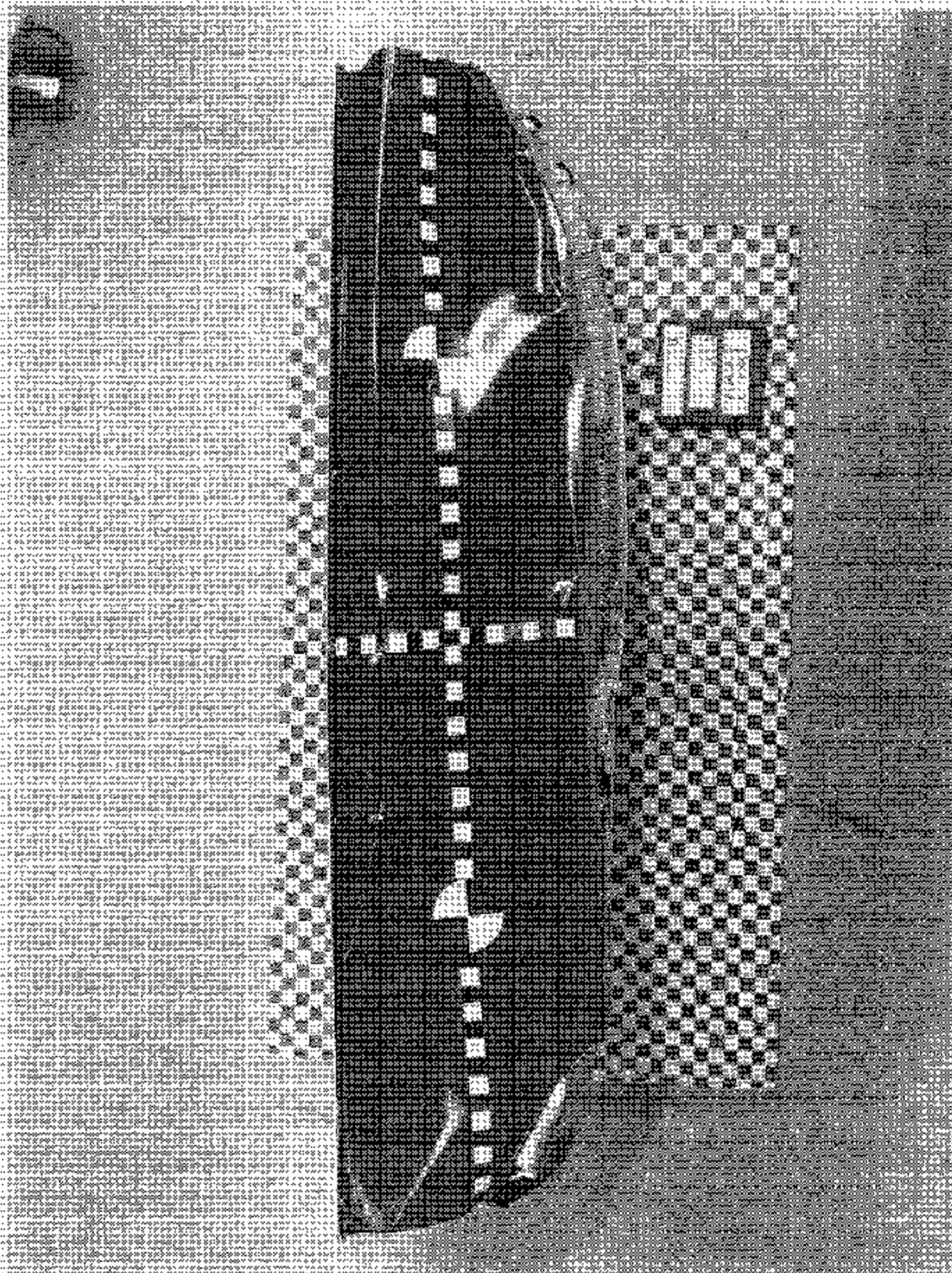


Figure A-14. Post-Test Top View of Impactor Face

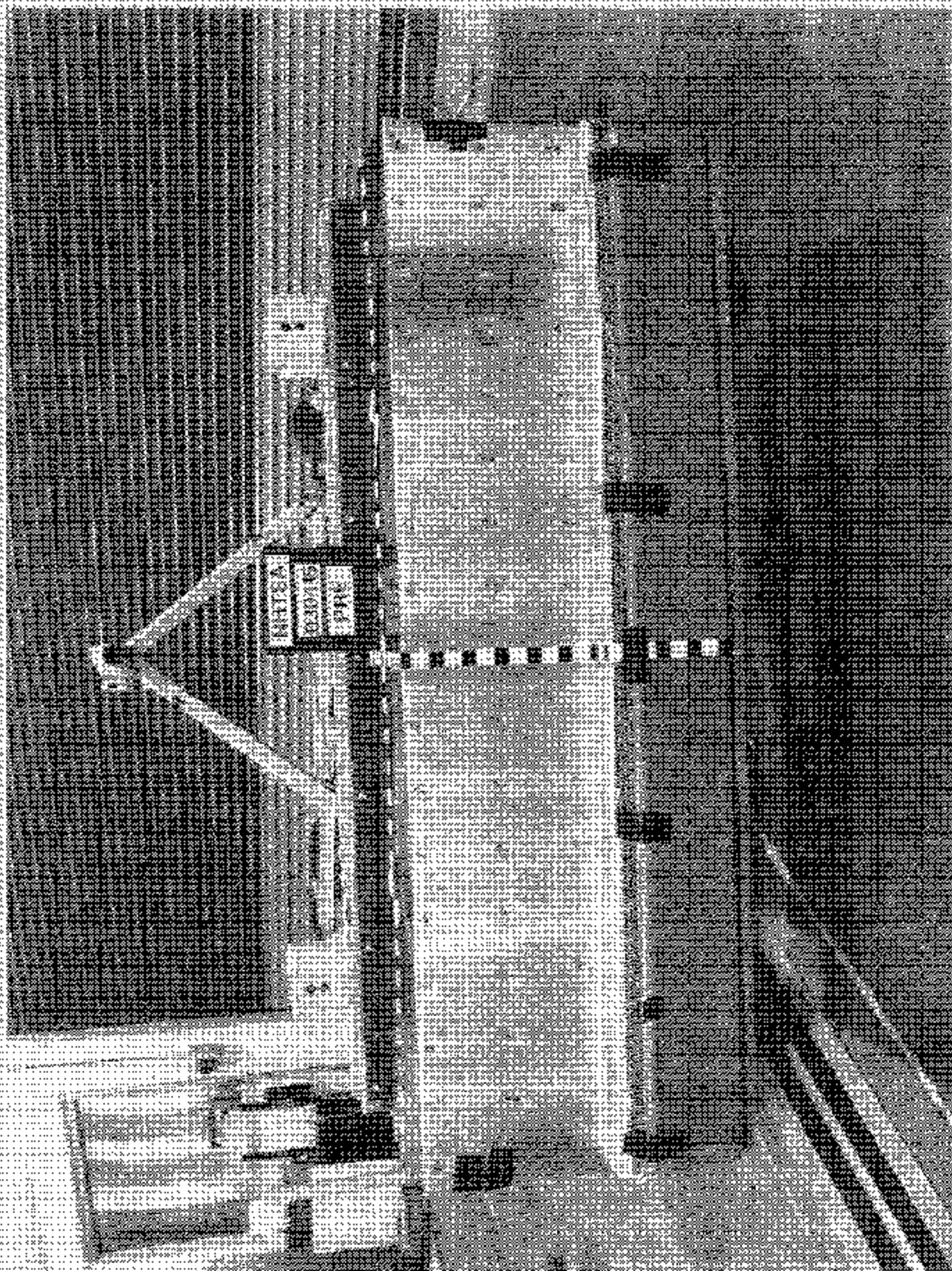


Figure A-15. Pre-Test View of MDB Showing Contact Switches in Place

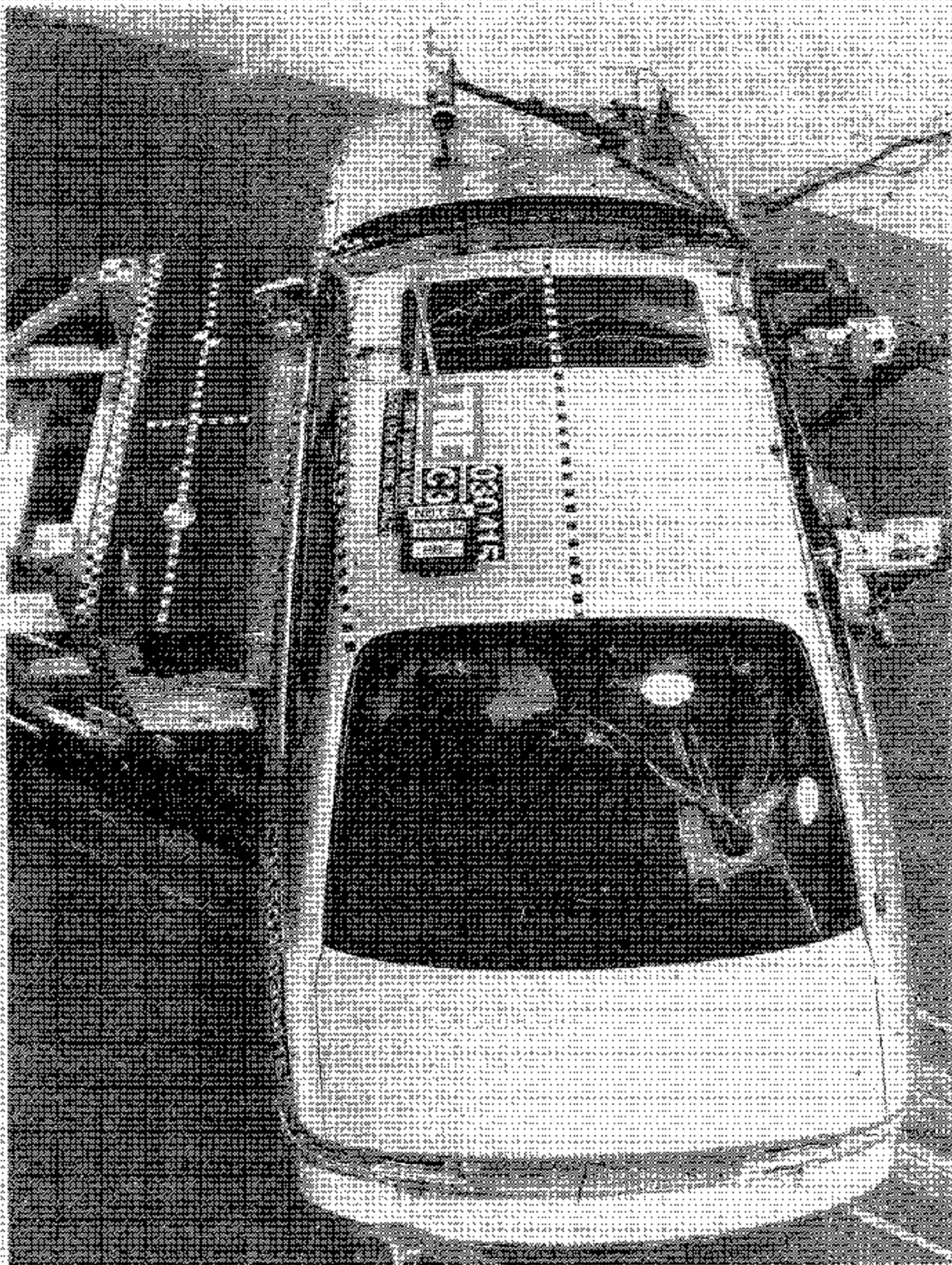


Figure A-16 Pre-Test Overhead View of MDR and Vehicle View

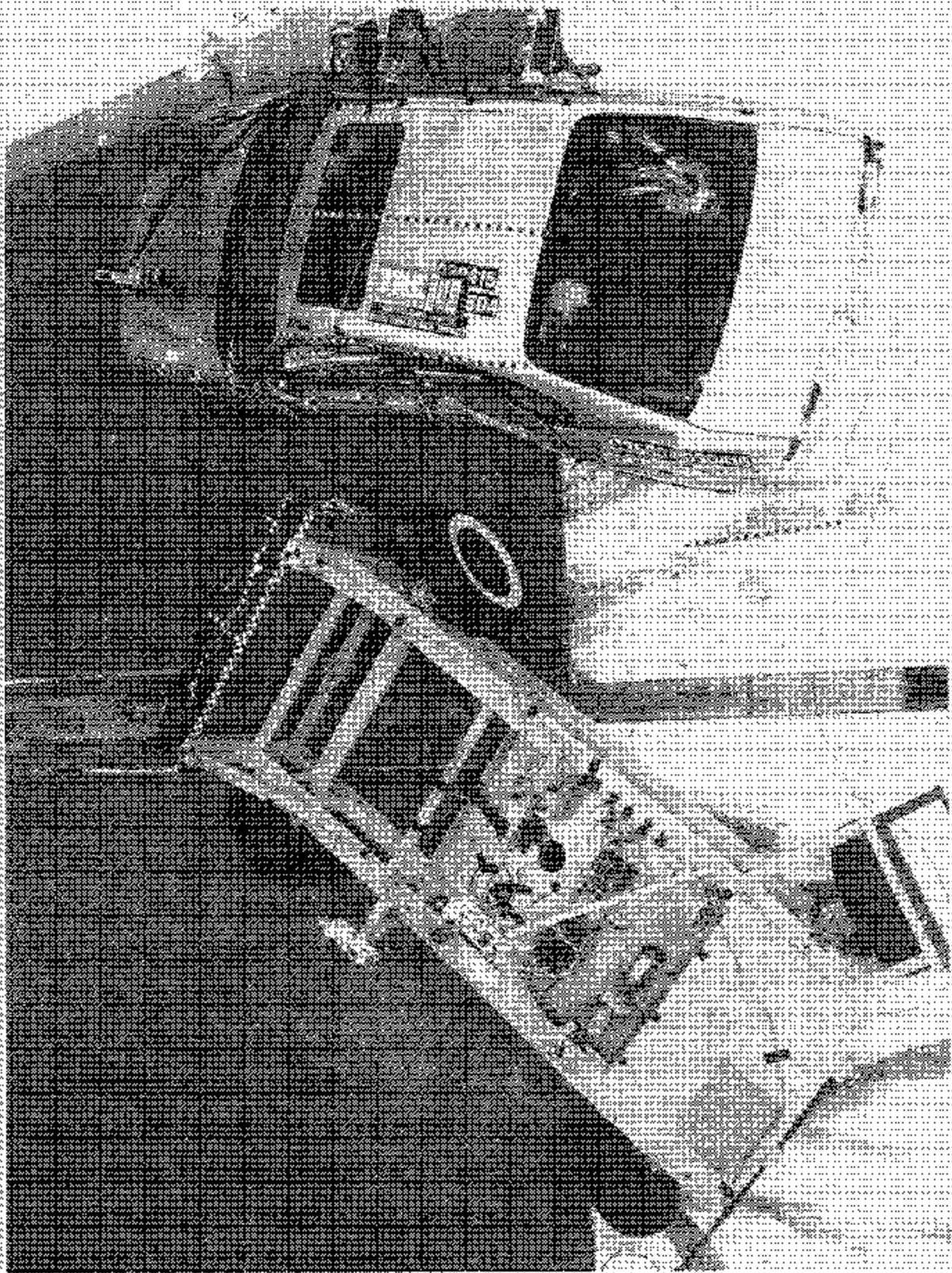


Figure A-17. Post-Test Overhead View of MDB and Vehicle View

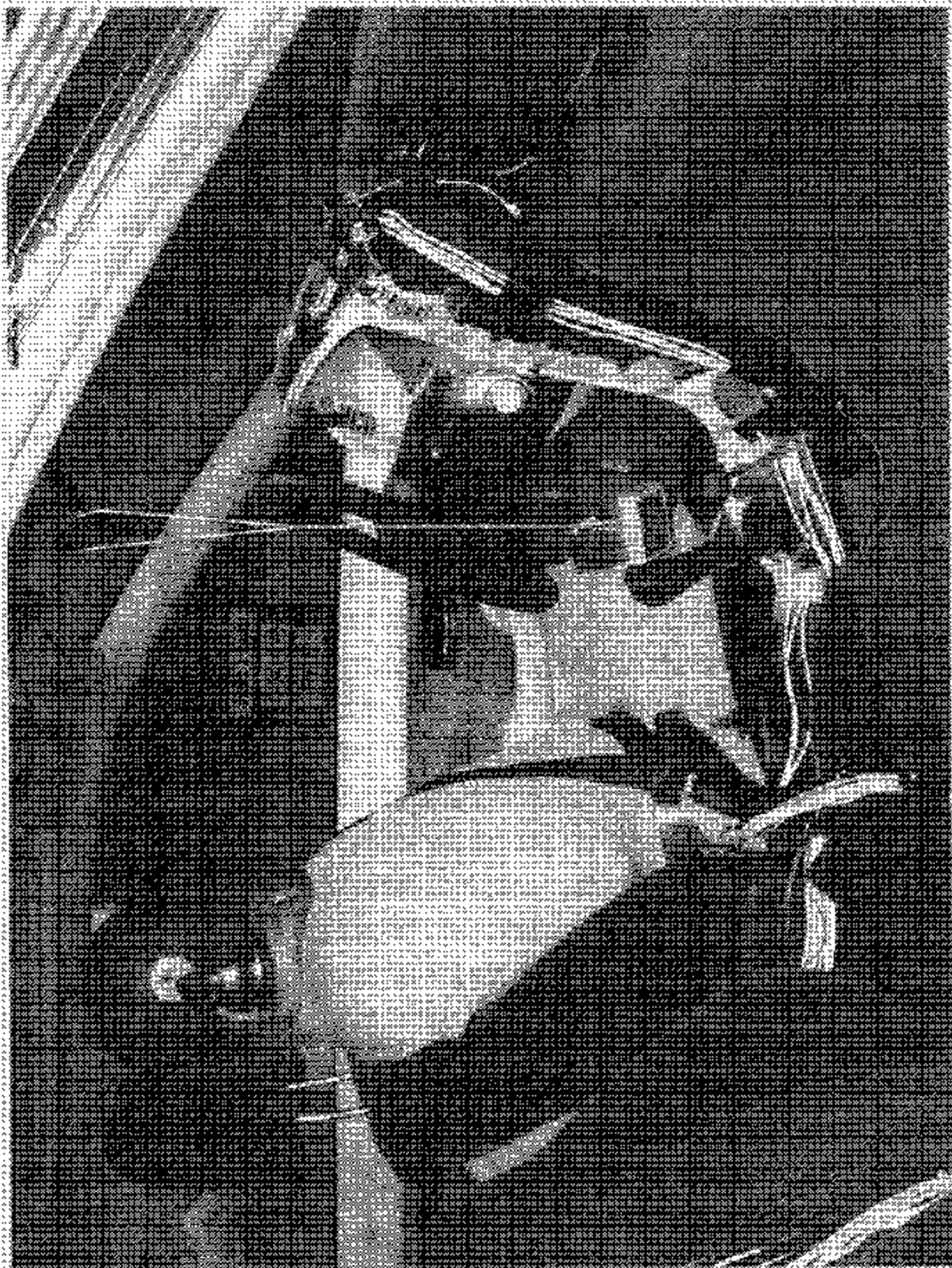


Figure A-18 Pre-Test Right Occupant Compartment View of Front SID

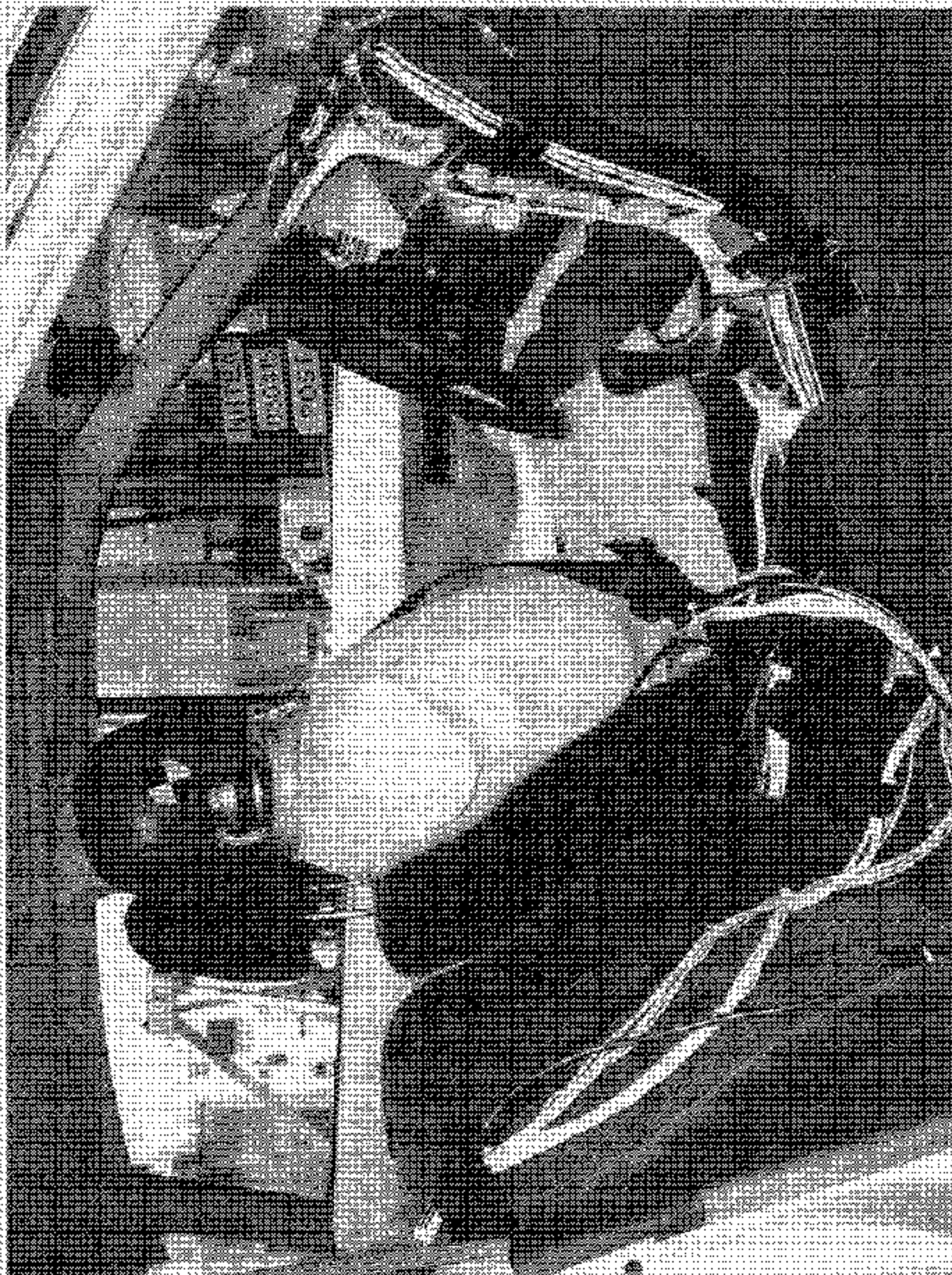


Figure A-19 Post-Test Right Occupant Compartment View of Front SID

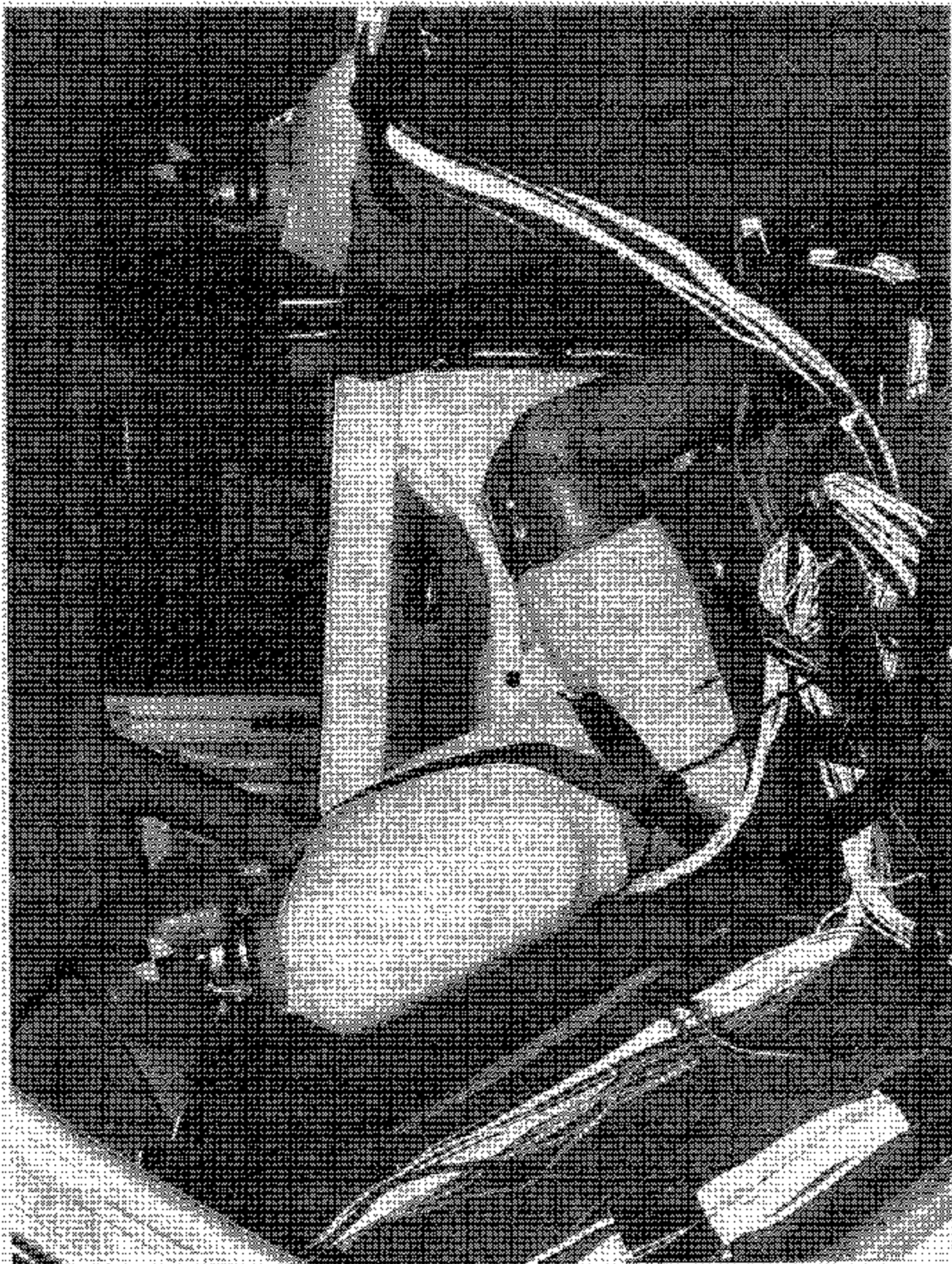


Figure A-20. Pre-Test Right Occupant Compartment View of Rear SID



Figure A-21 Post-Test Right Occupant Compartment View of Rear SID

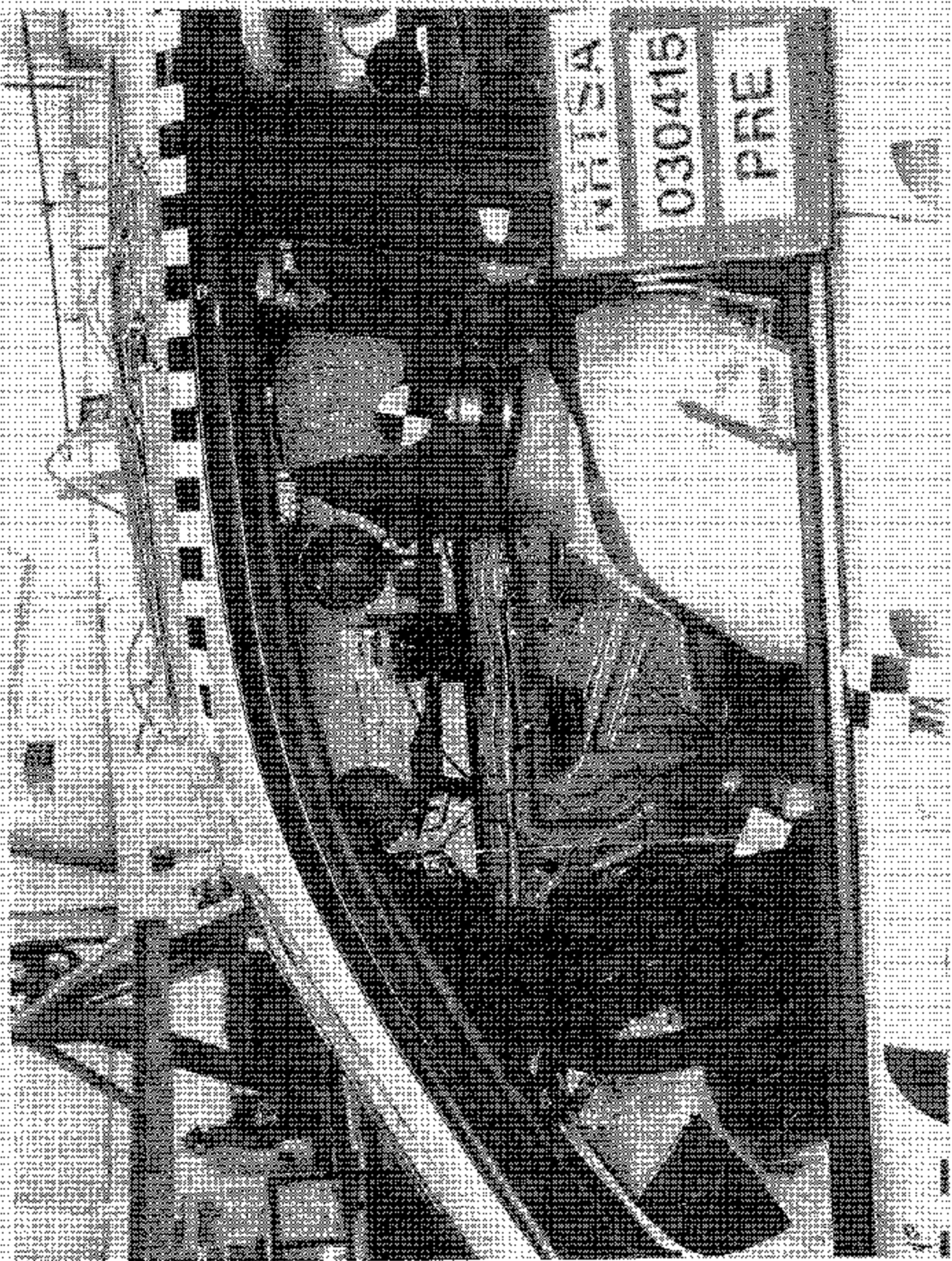


Figure A-72 Pre-Test Left View of Front SID

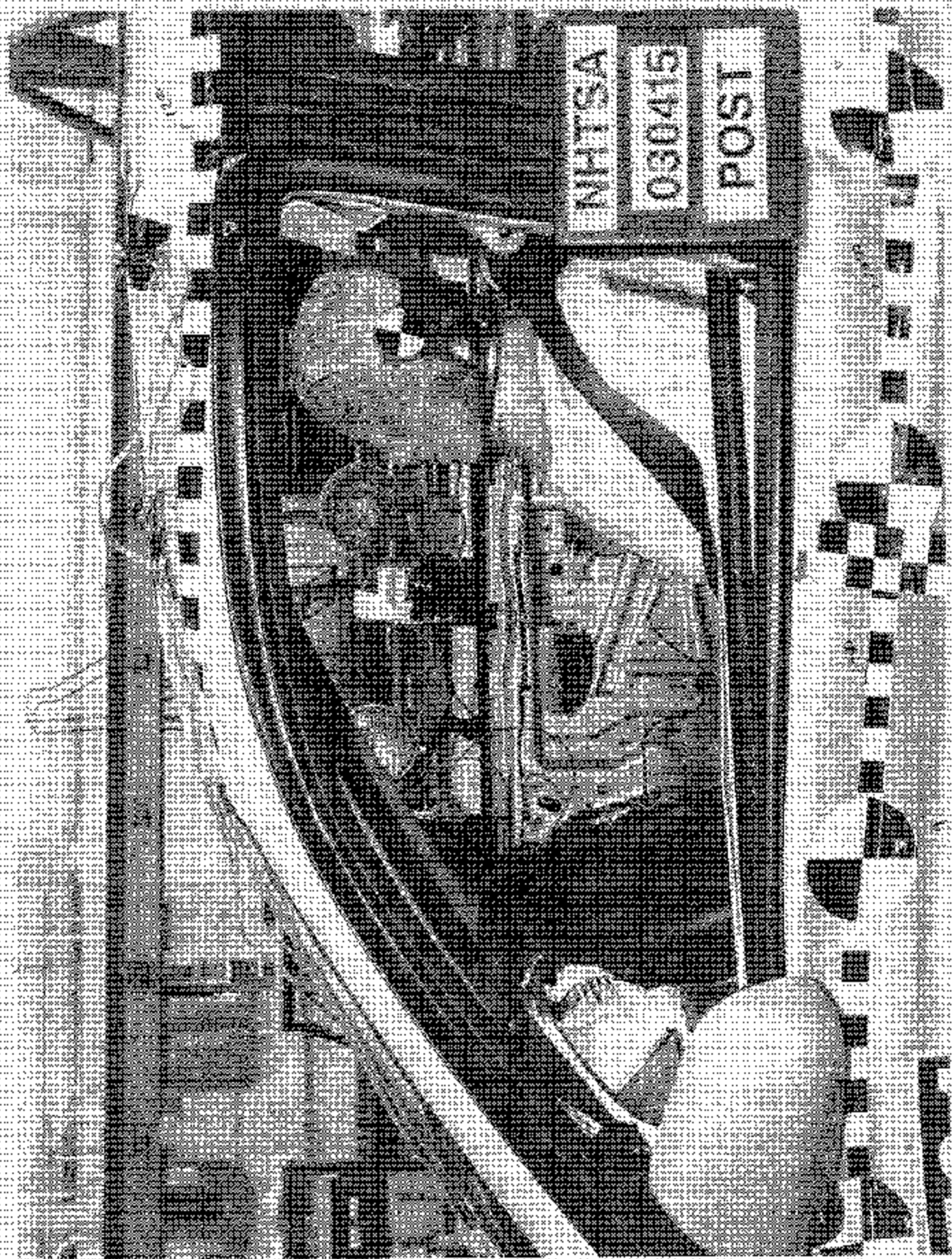


Figure A-23. Post-Test Left View of Front SID

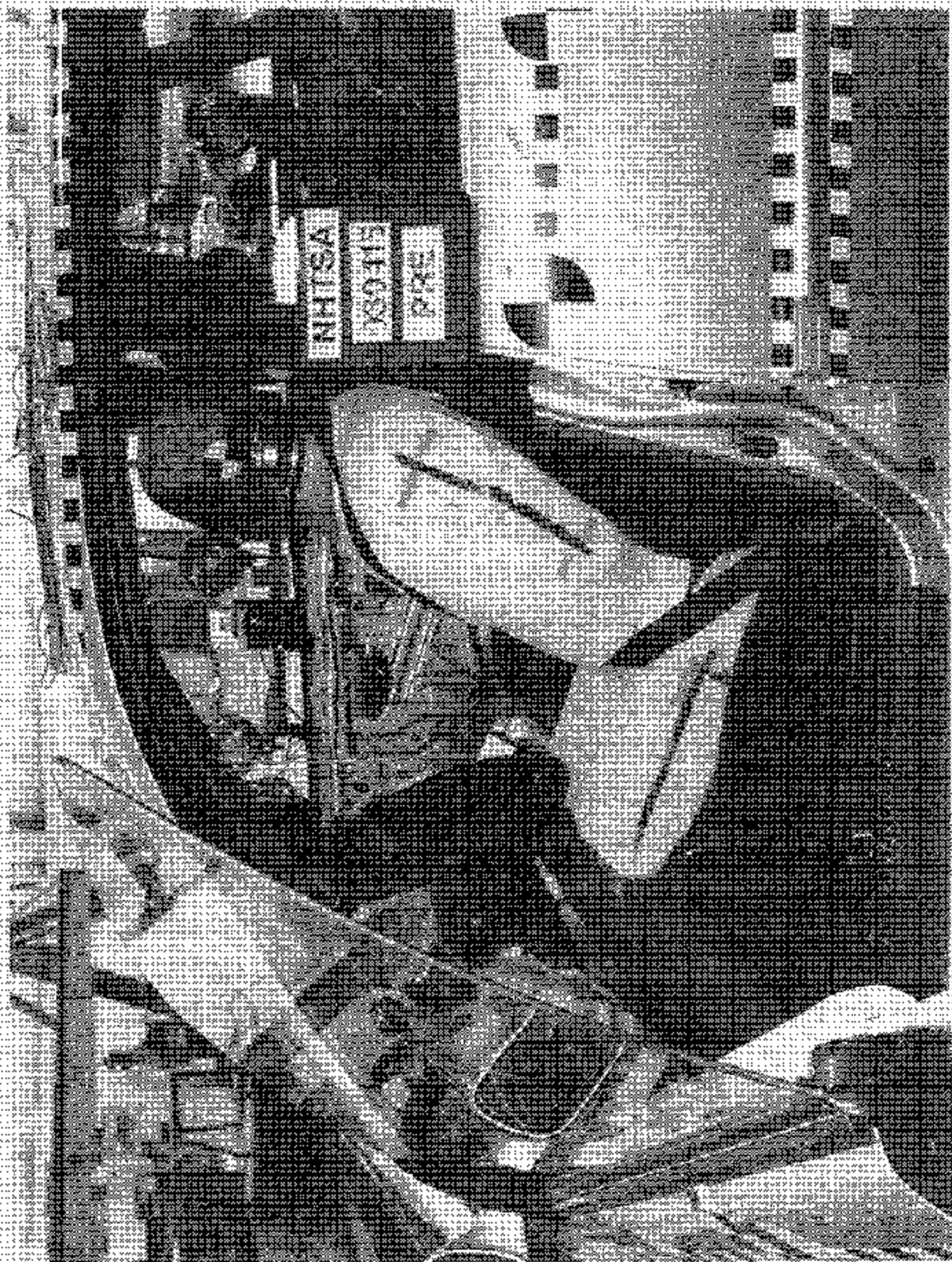


Figure A-24 Pre-Trial Left View of Fennt SID and Belt Position

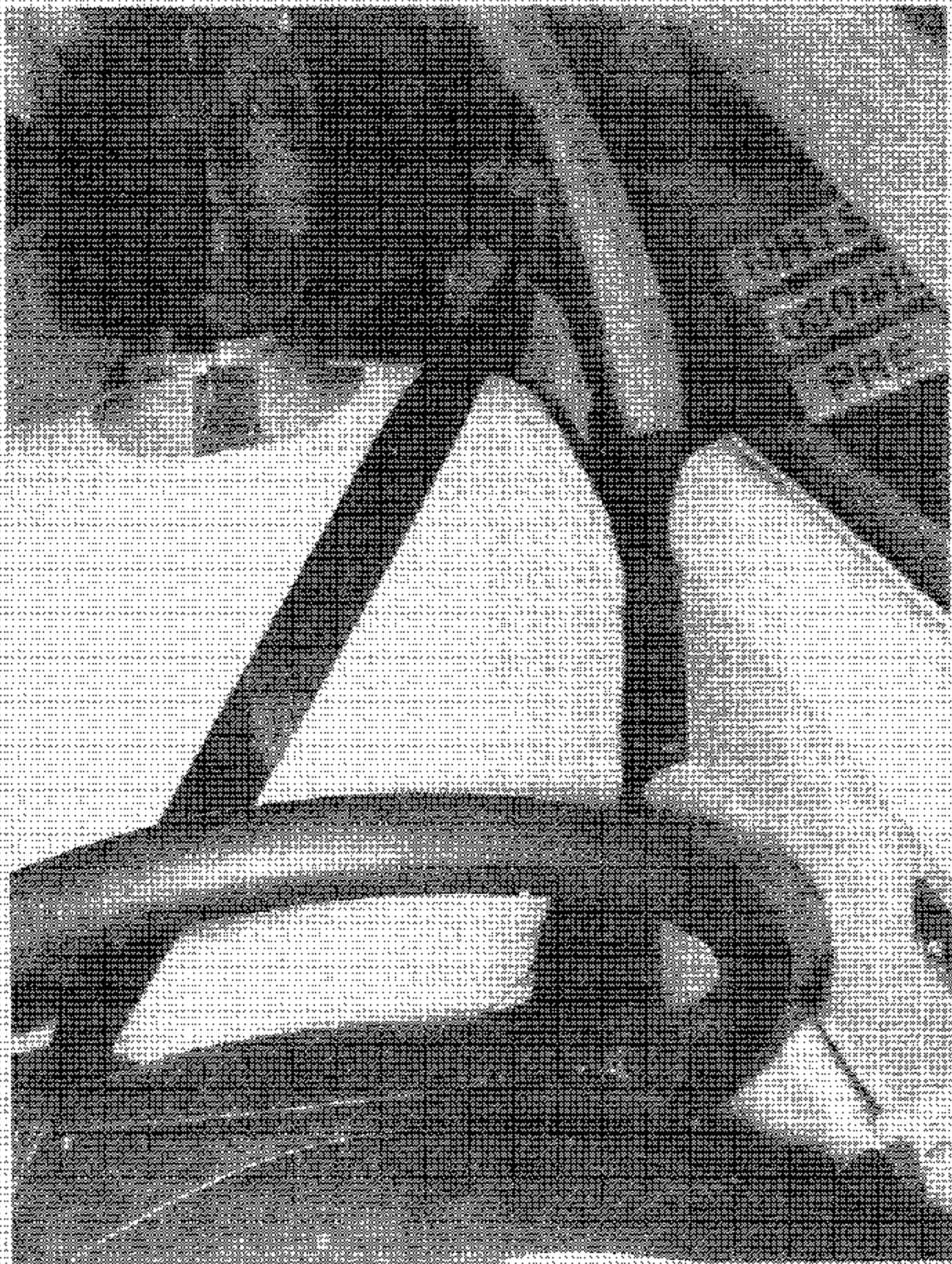


Figure A-25 Pre-Test Left View of Front SID and Door Clearance

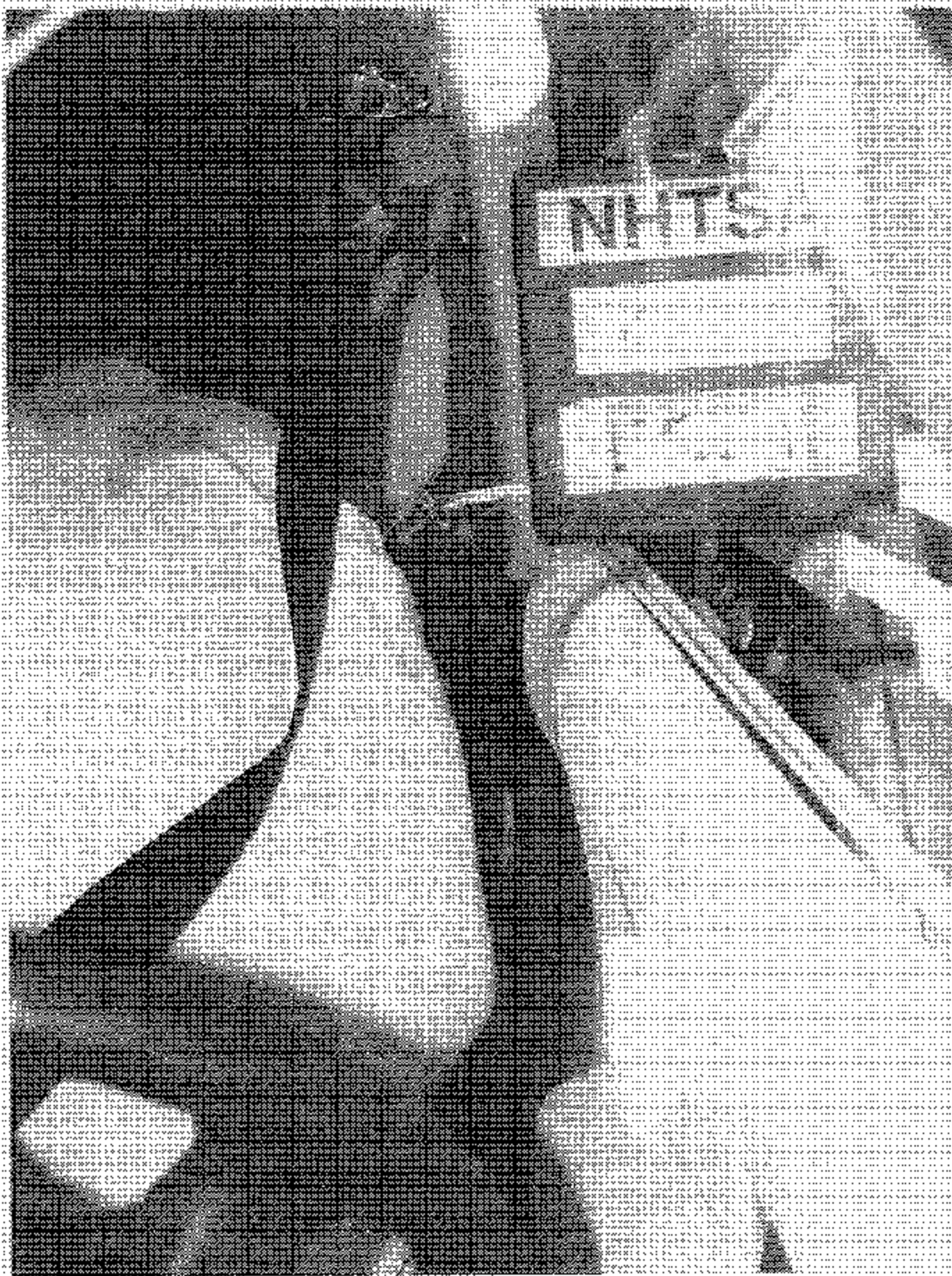


Figure A-26 Post-Test Left View of Front SID and Door Clearance

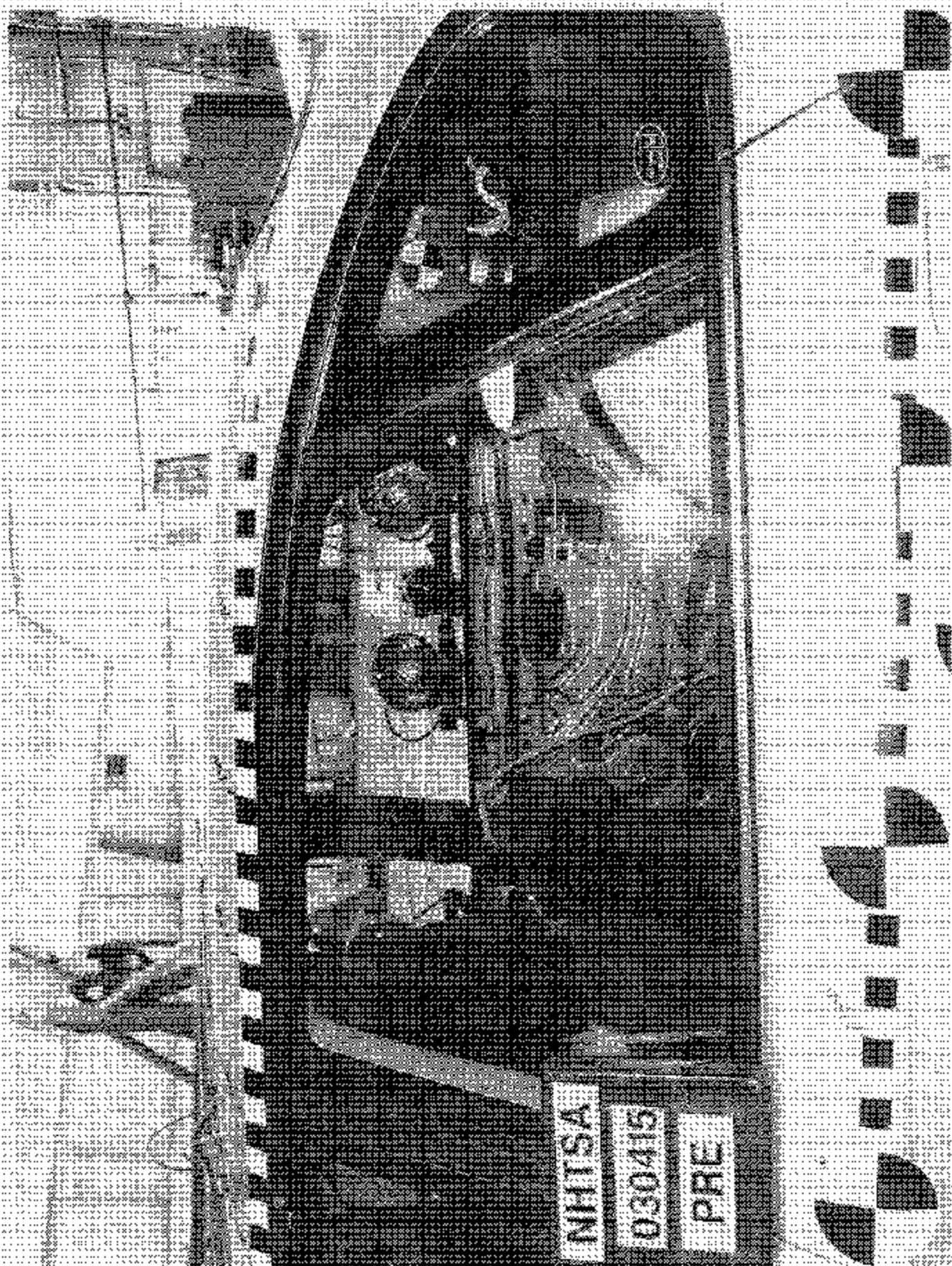


Figure A-27. Pre-Test Left View of Rear SID

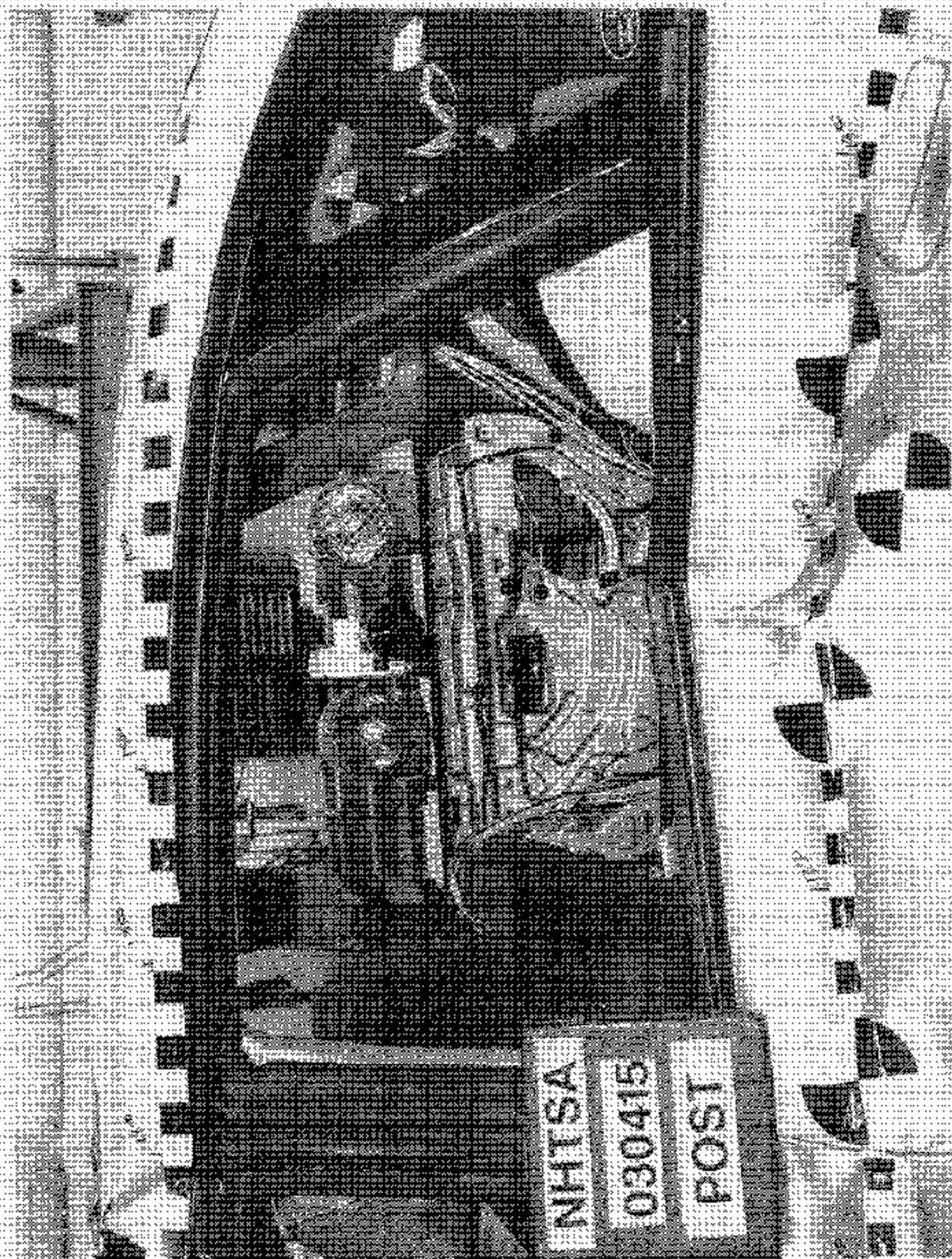


Figure A-28. Post-Test Left View of Rear SID

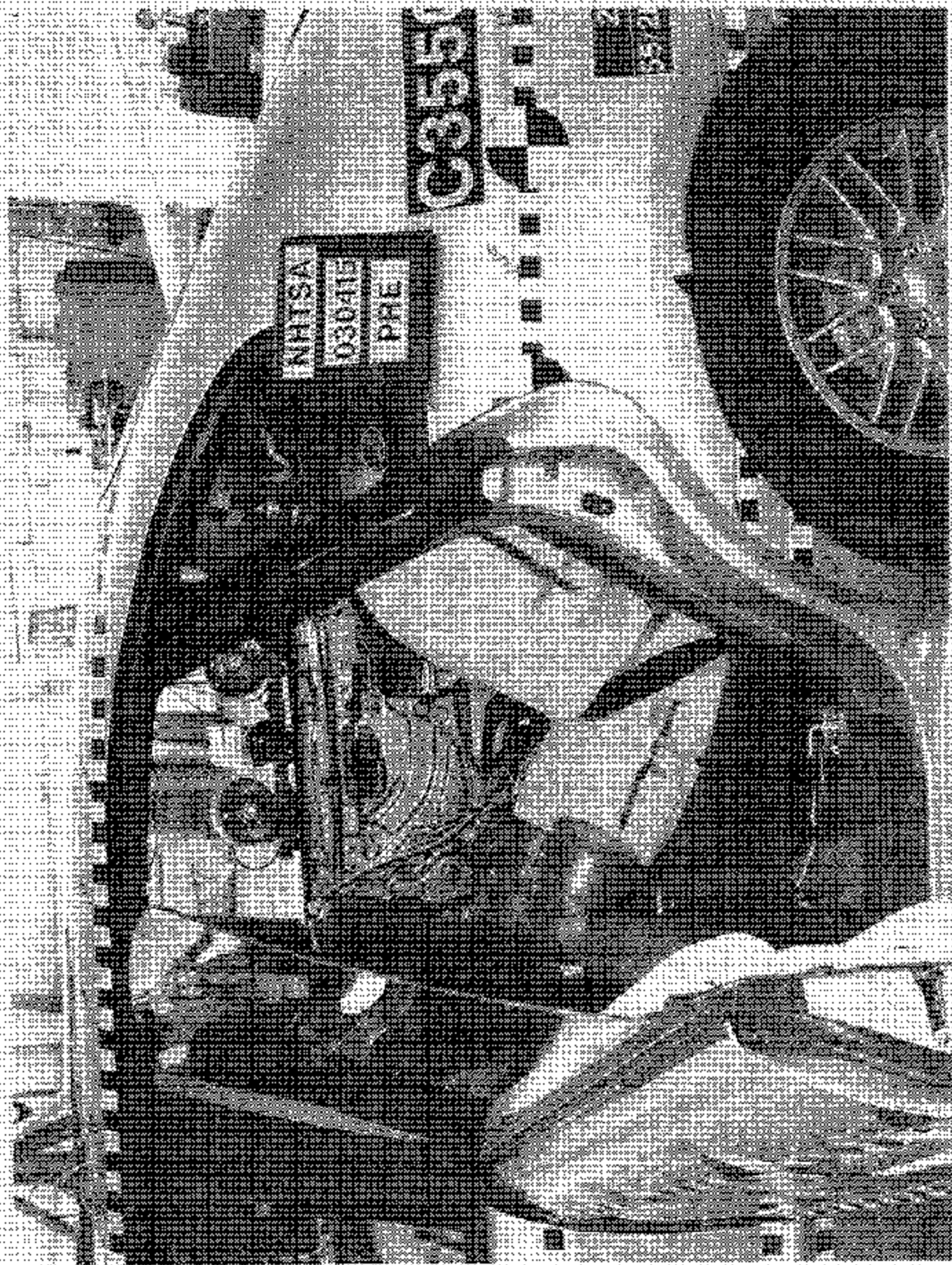


Figure A-29 Pre-Test Left of Rear SH and Belt Position

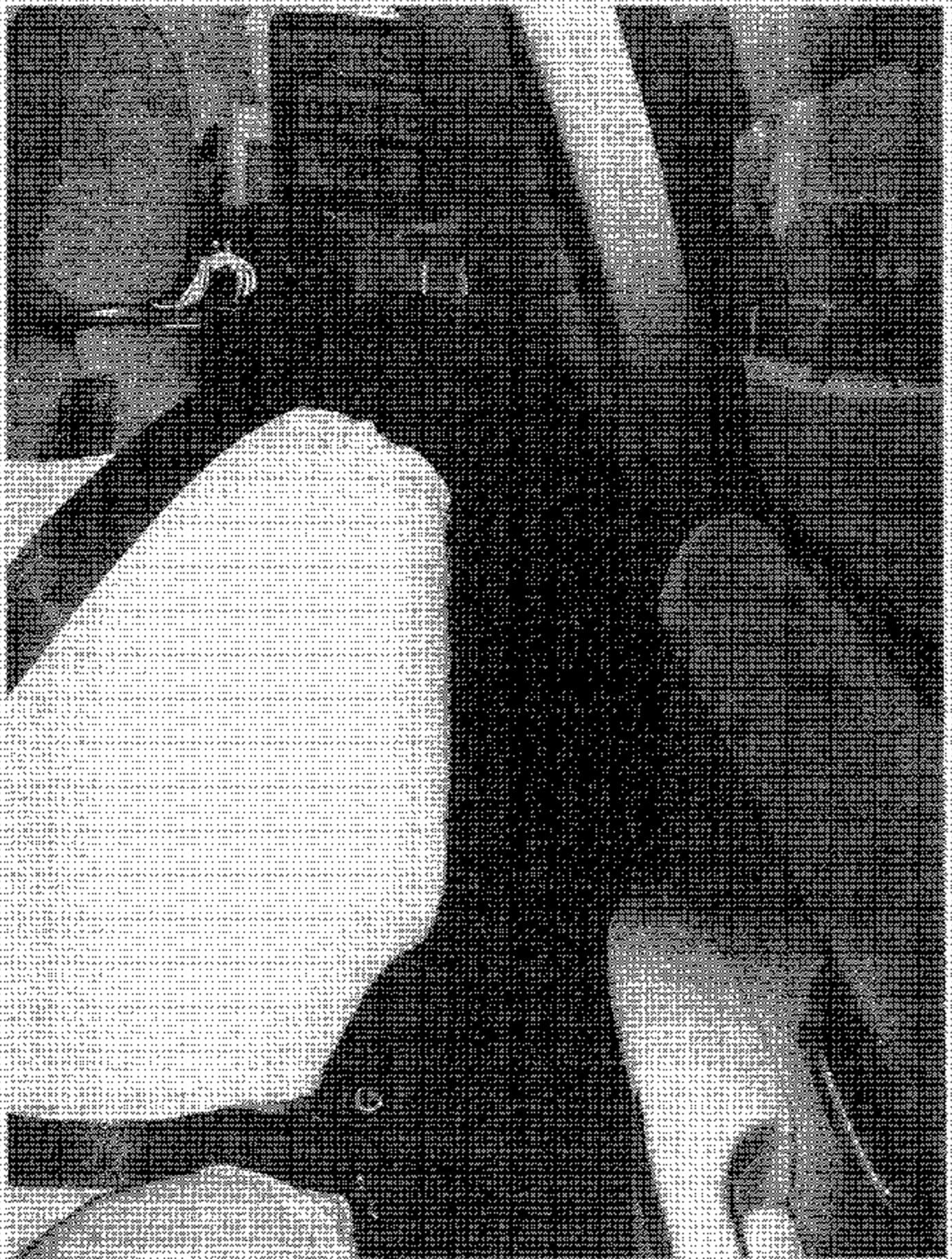


Figure A-36 Pre-Test Left View of Rear SID and Door Clearance



Figure A-33 Post-Test Left View of Rear SID and Door Clearance

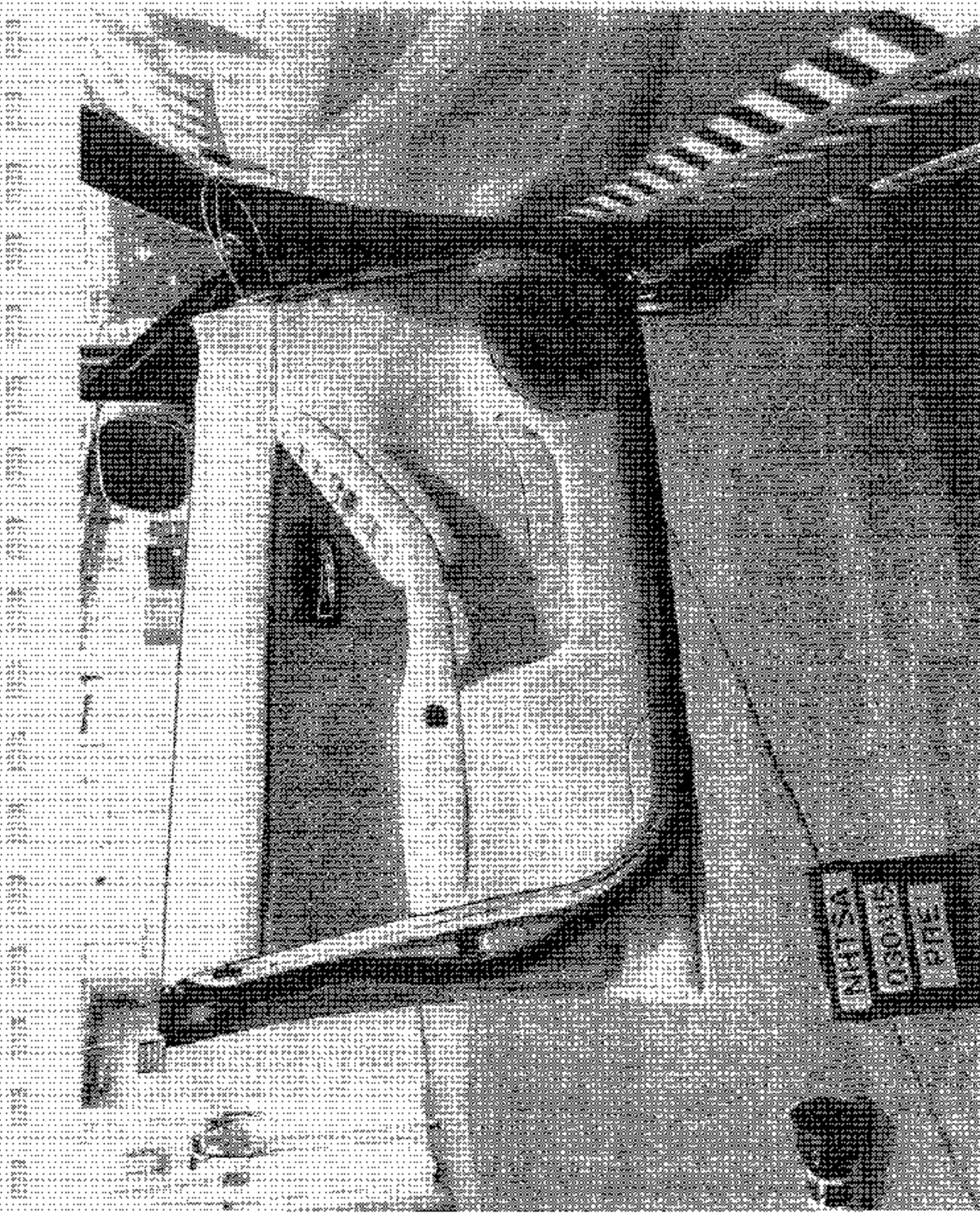


Figure A-52 Pre-Test Interior of Front Door

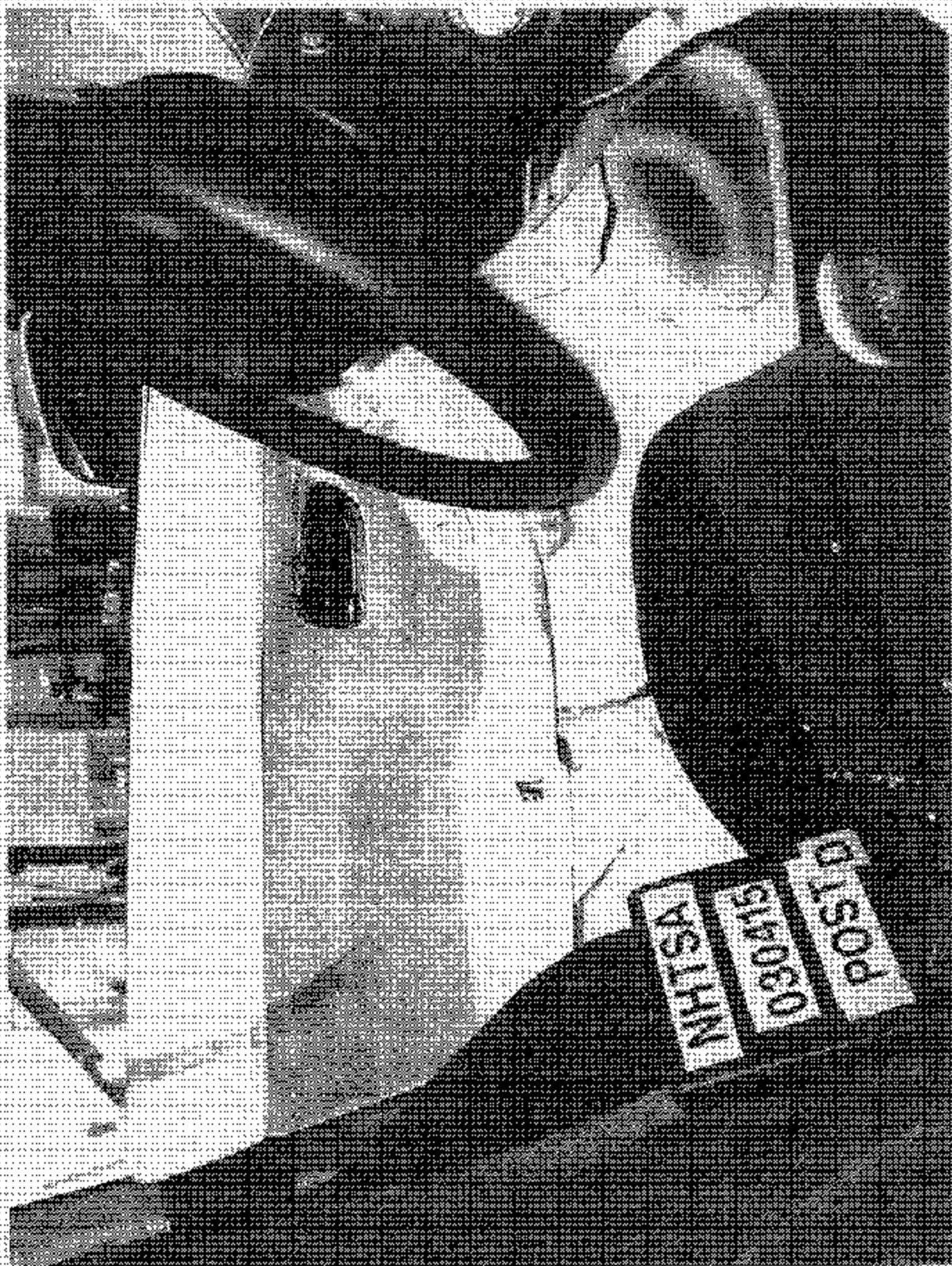


Figure A-33. Post-Test Interior of Front Door Showing SID Impact Location.

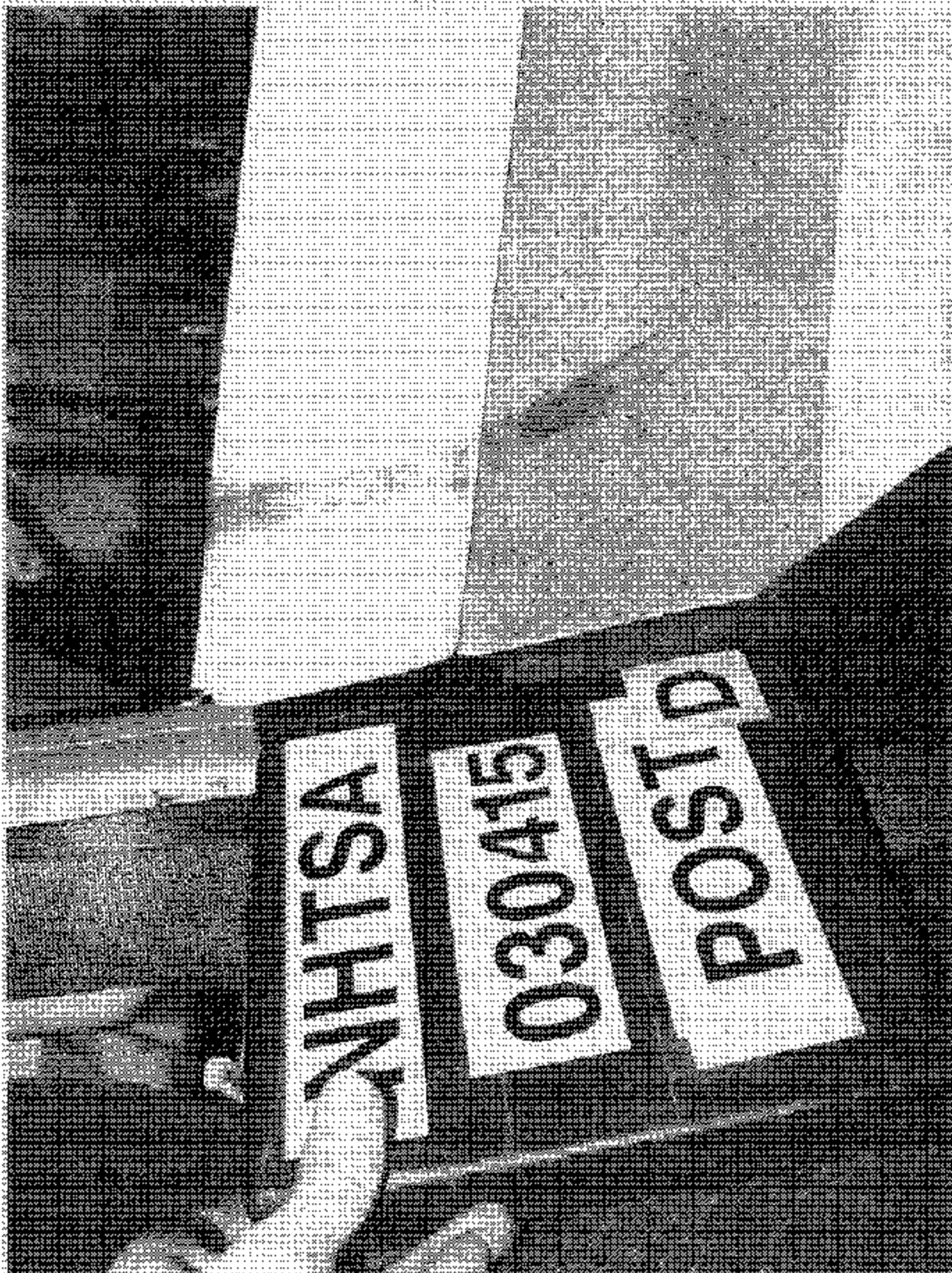


Figure A-34. Post-Test From STD Contact - View 1



Figure A-35. Post-Test Front SID Contact - View 2

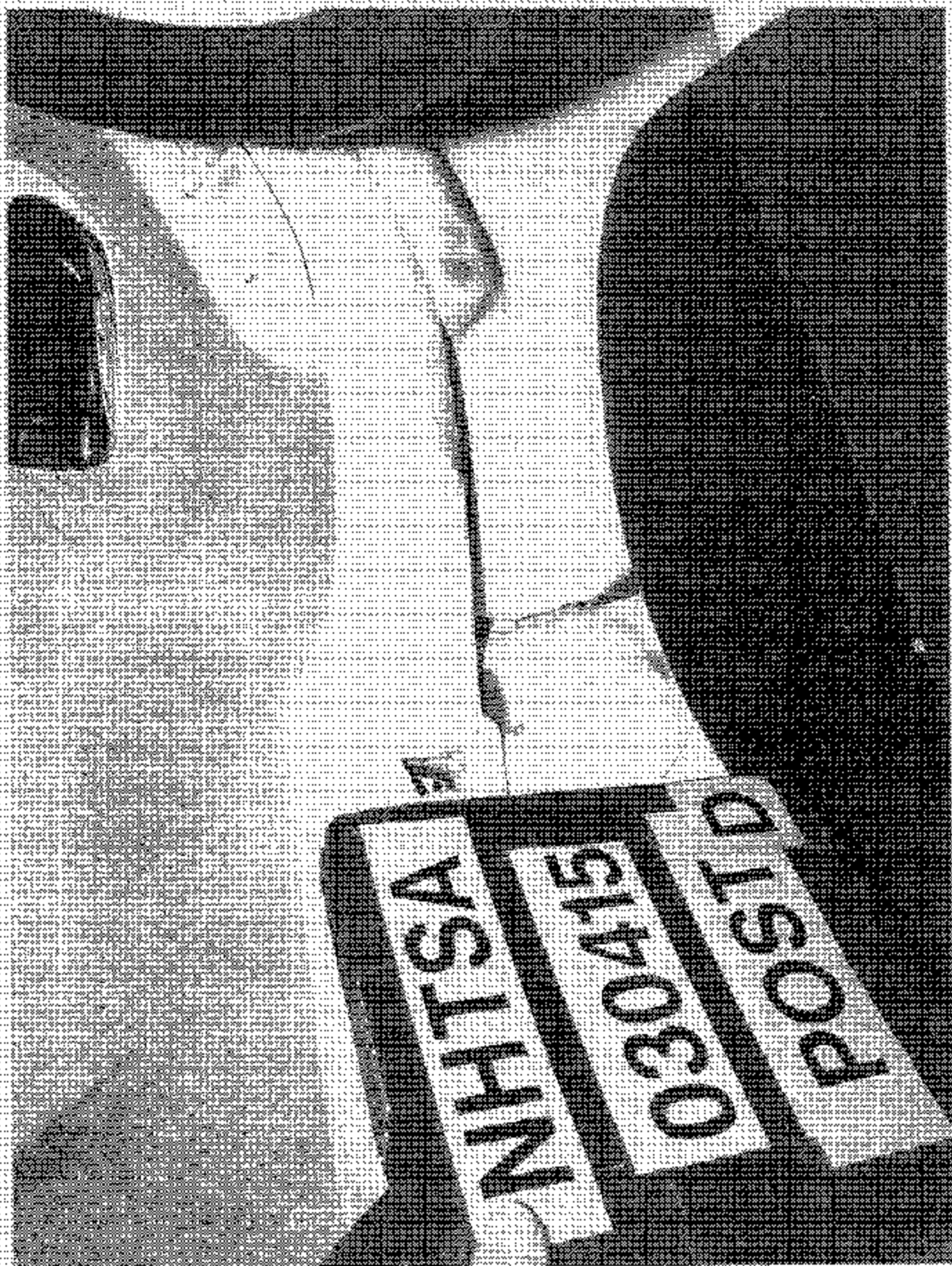


Figure A-36. Post-Test From SID Contact - View 3



Figure A-37 Post-Test Front SID Contact - View 4

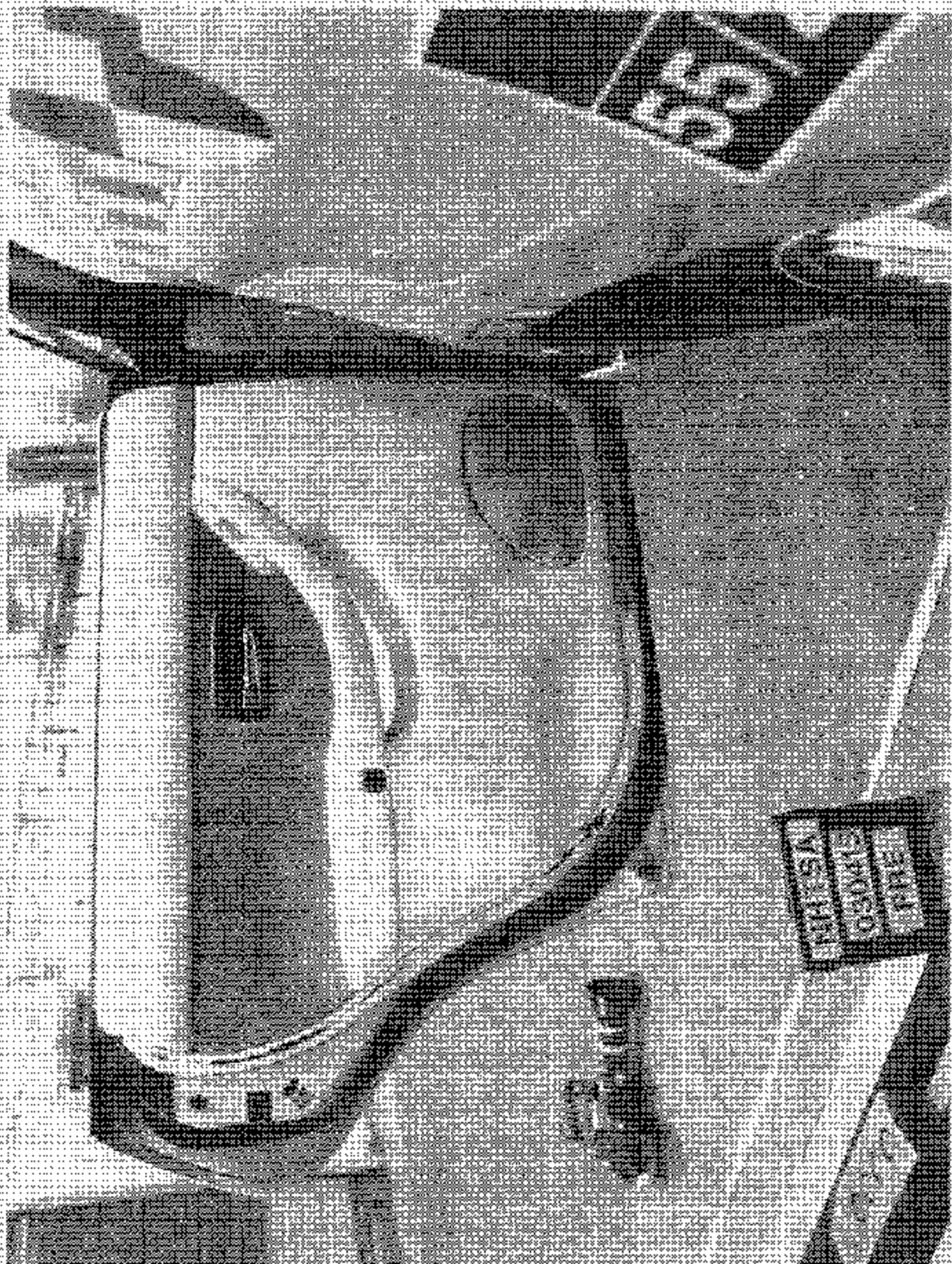


Figure A-38 Pre-Test Interior of Rear Door

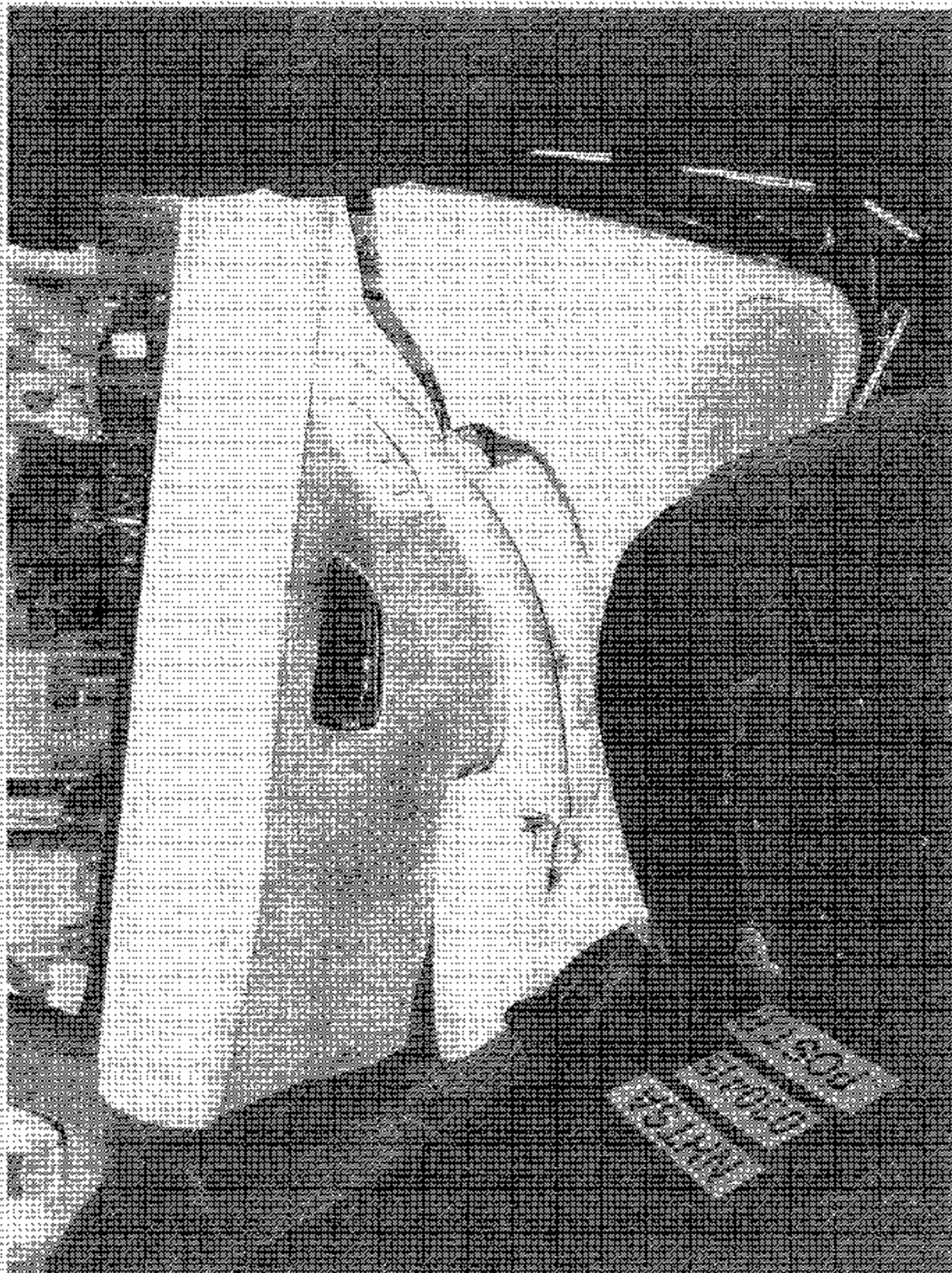


Figure A-39. Post-Test Interior of Rear Door Showing SID Impact Locations

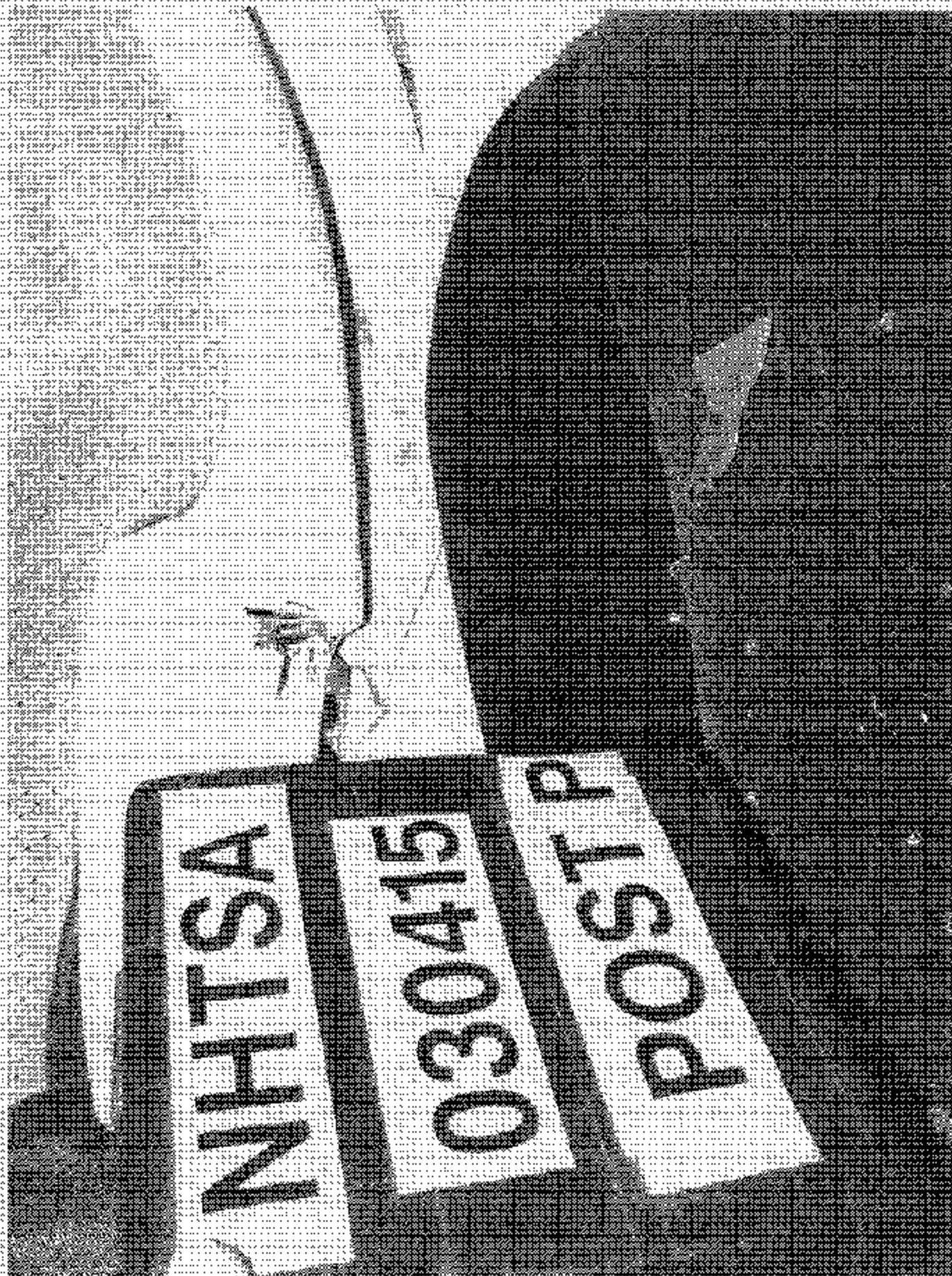


Figure A-48 Post-Test Rear SID Contact - View 1



Figure A-41. Post-Test Rear SID Contact - View 2



Figure A-42 Post-Test Rear SID Contact - View 3

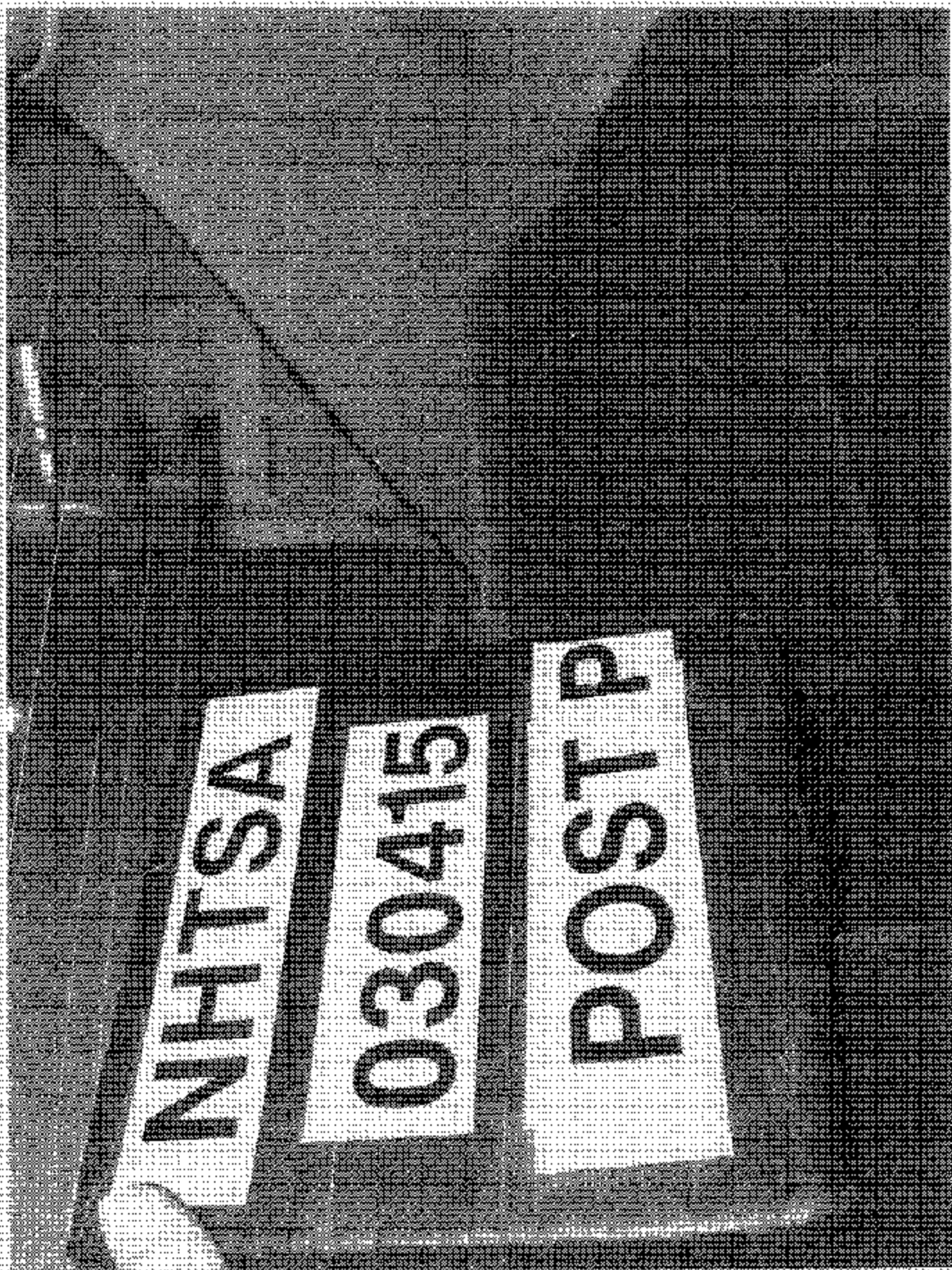


Figure A-43 Post-Test Rear SID Contact - View 4

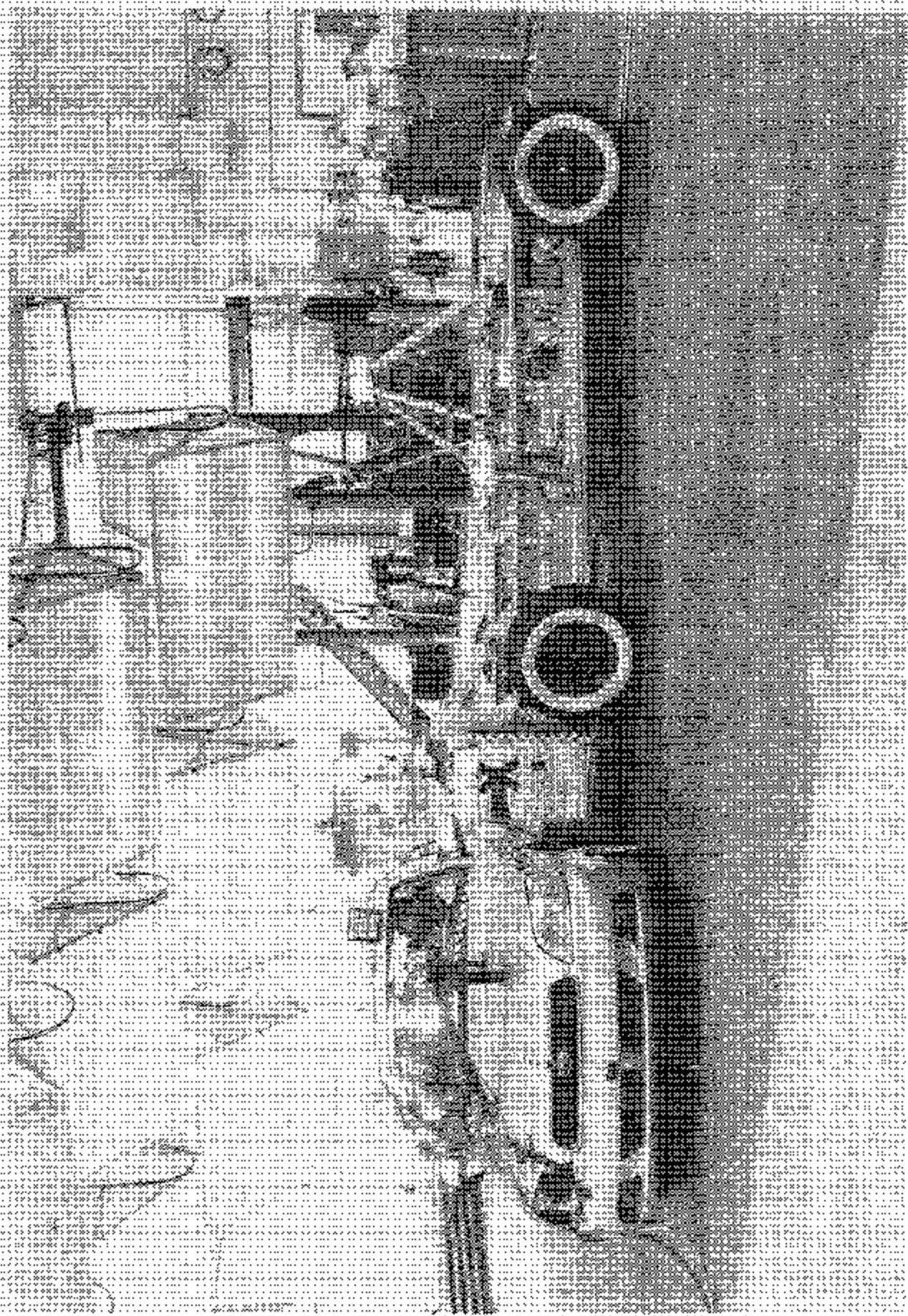


Figure A-44 Pre-Test Left Side View of MID With Impactor Face in Position



Figure 3-48 Pre-Test Primary Impact Point View



Figure A-46. Post-Test Primary Impact Point View

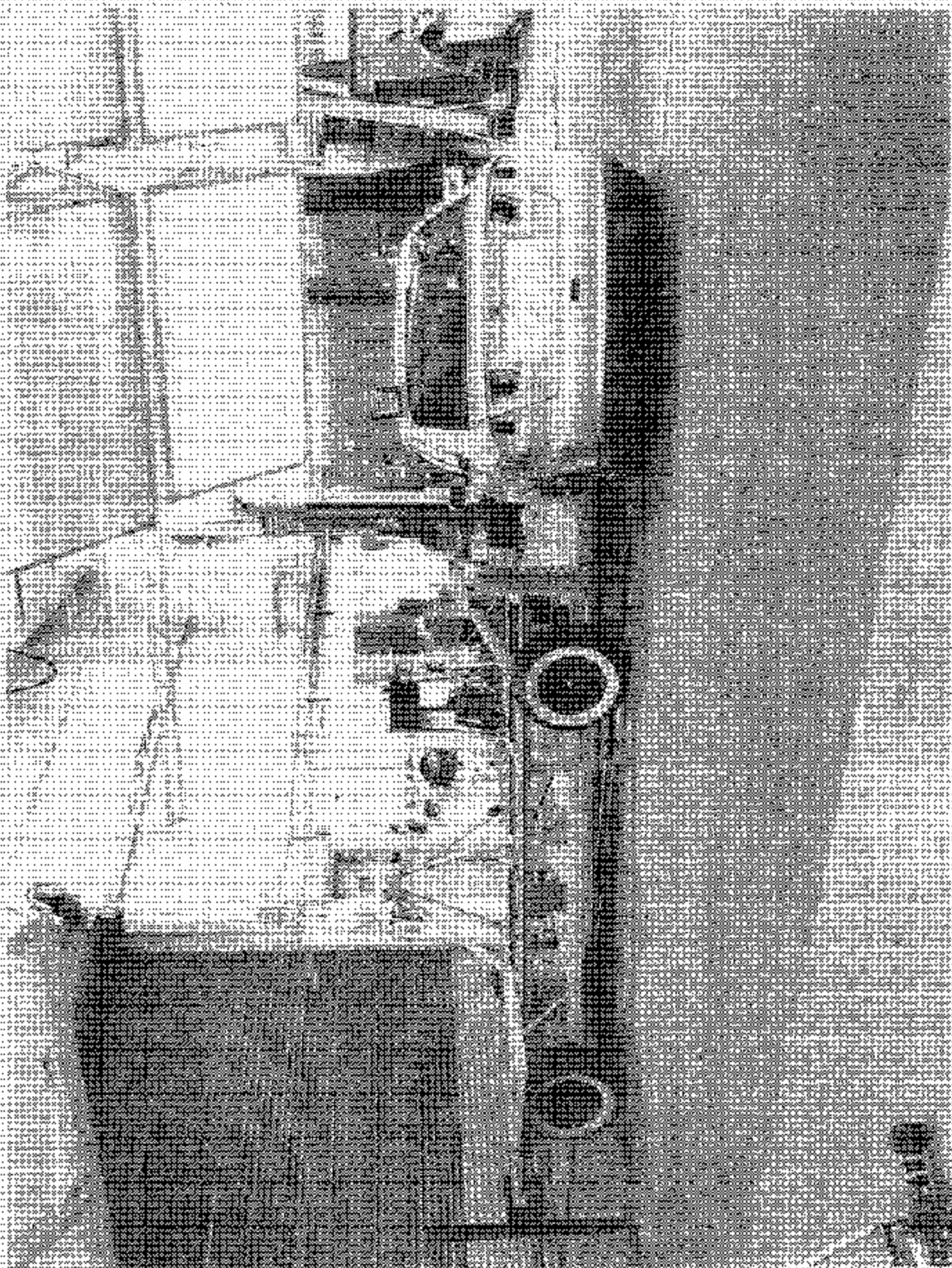


Figure A-47: Pre-Test Right Side View of MDB With Impactor Face in Position

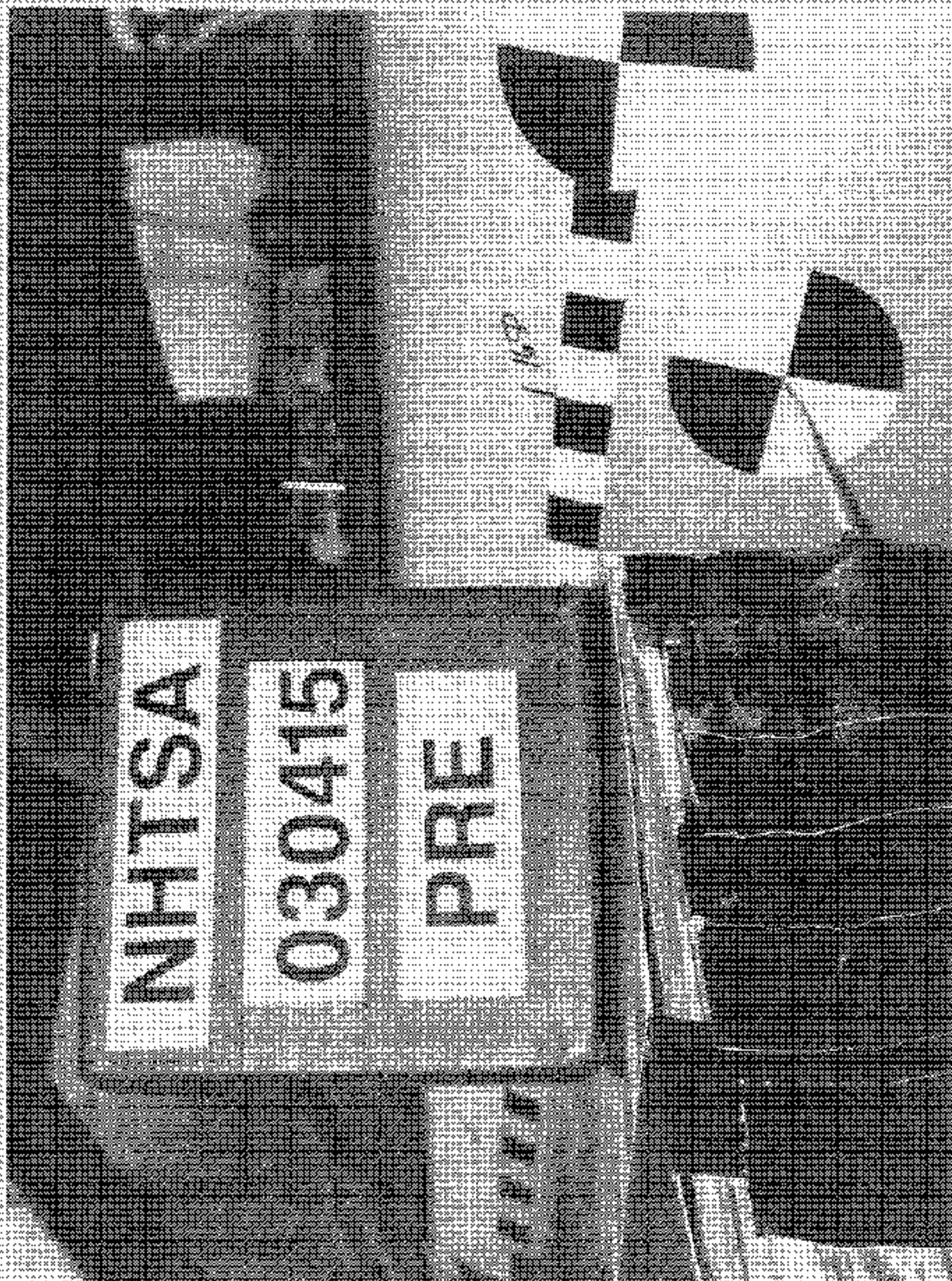


Figure A-48. Pre-Test Secondary-Impact Point View

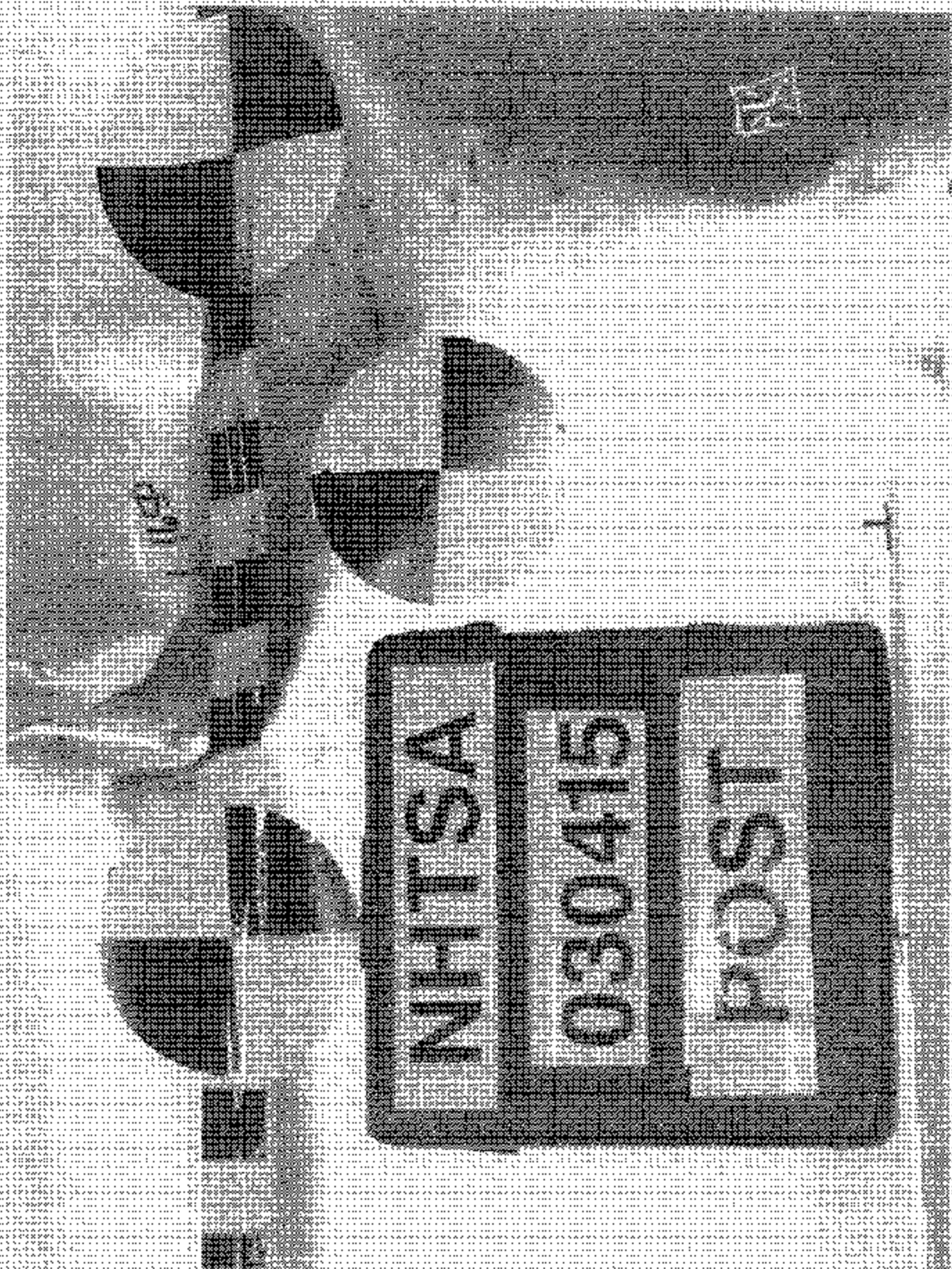


Figure A-49 Post-Test Secondary Impact Point View

C35504

MFD BY FUJI HEAVY INDUSTRIES LTD.
GVWR: 4400LB(1996KG) GAWR: F 2220LB(1007KG) R 2180LB(989KG)
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

DATE: 1/03

VIN: 4S3BE635436212096

TYPE: PASSENGER CAR



ASSEMBLED BY SUBARU OF INDIANA AUTOMOTIVE INC. MADE IN U.S.A.

Figure A-50 Pre-Test Vehicle Certification Label View

SUBARU

VEHICLE CAPACITY WEIGHT:

SEDAN 850LB(386kg)

WAGON 900LB(408kg)

NUMBER OF OCCUPANTS:

TOTAL 5 (FRONT 2/REAR 3)

RECOMMENDED TIRE INFLATION PRESSURE

kPa(psi)

TIRE SIZE	FRONT	REAR
P205/55R16 89H	220(32)	210(30)
TEMPORARY SPARE TIRE		
T145/80R16 105M		420(60)

EP

Figure A-51 Pre-Test Vehicle Recommended Tire Pressure Label View



Figure A-52 Impact Event

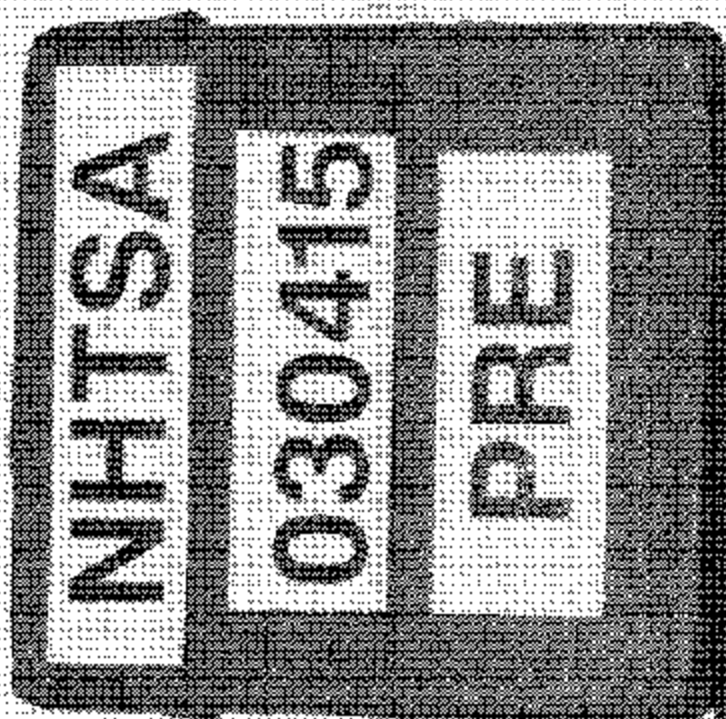


Figure A-53: Pre-Test Fuel Cap

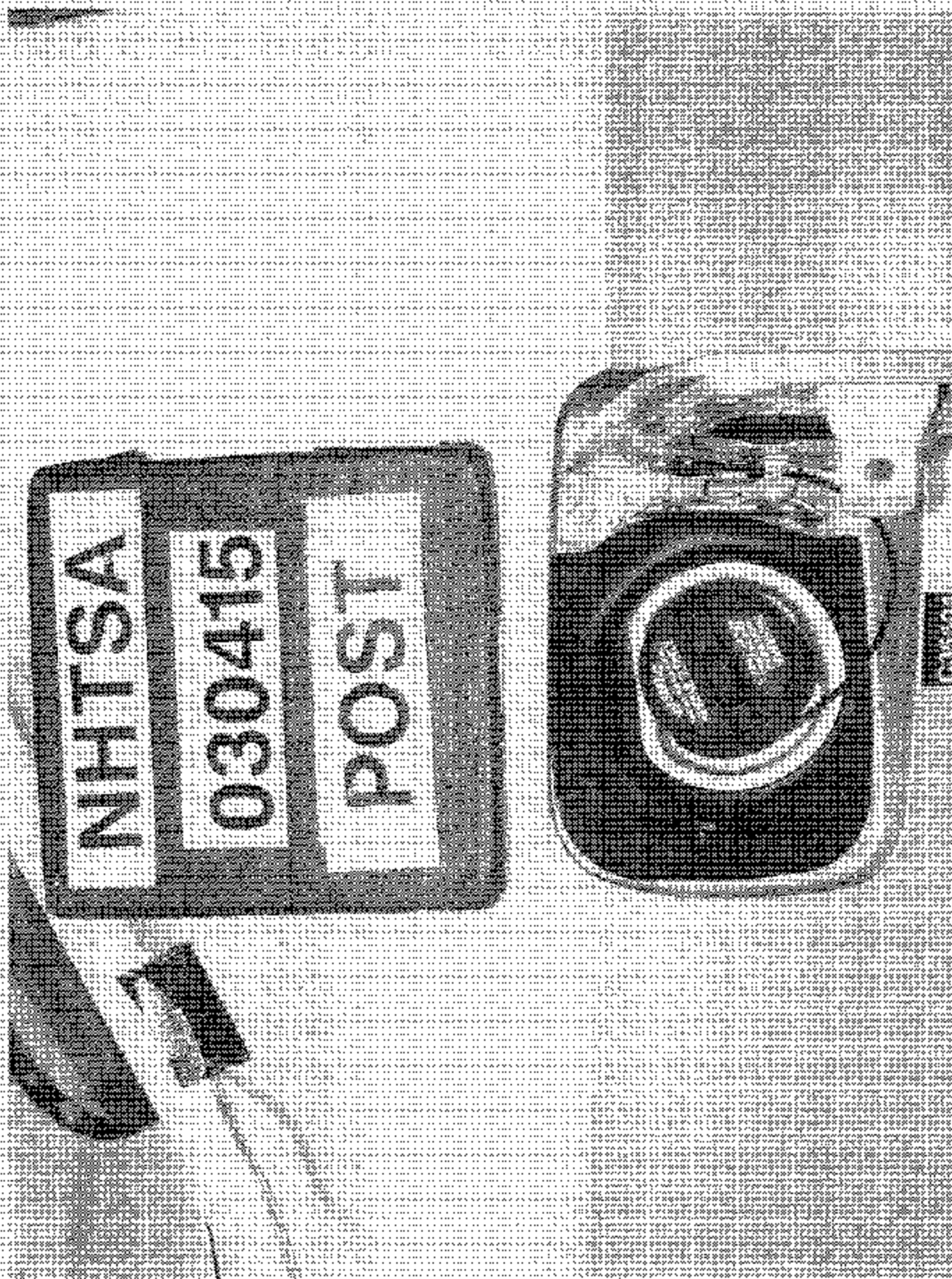


Figure A-54 Post-Test Fuel Cap

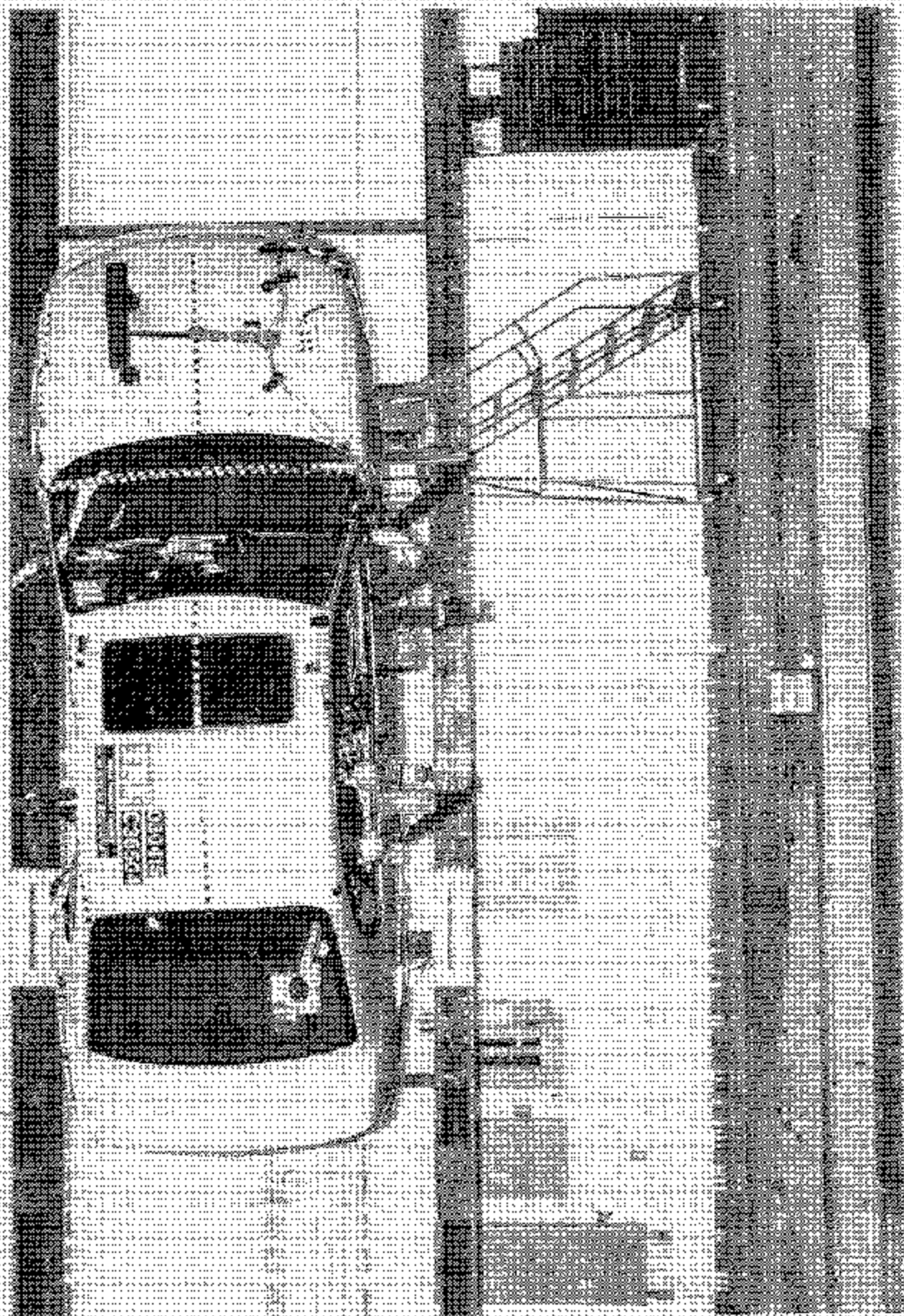


Figure A-55 FMYSS 001 Rollover View at 90°

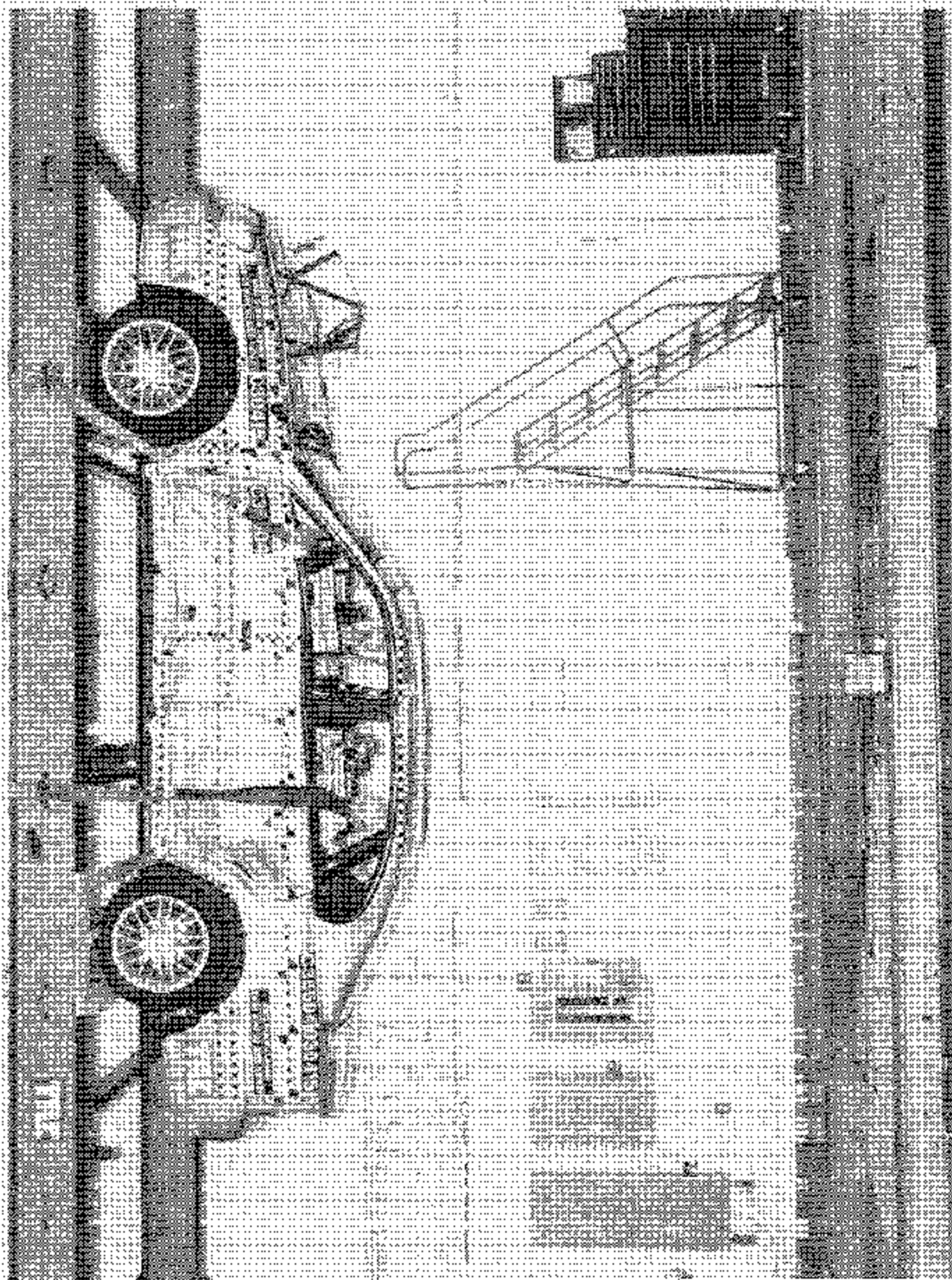


Figure A-36 FMVSS 301 Rollover View at 180°

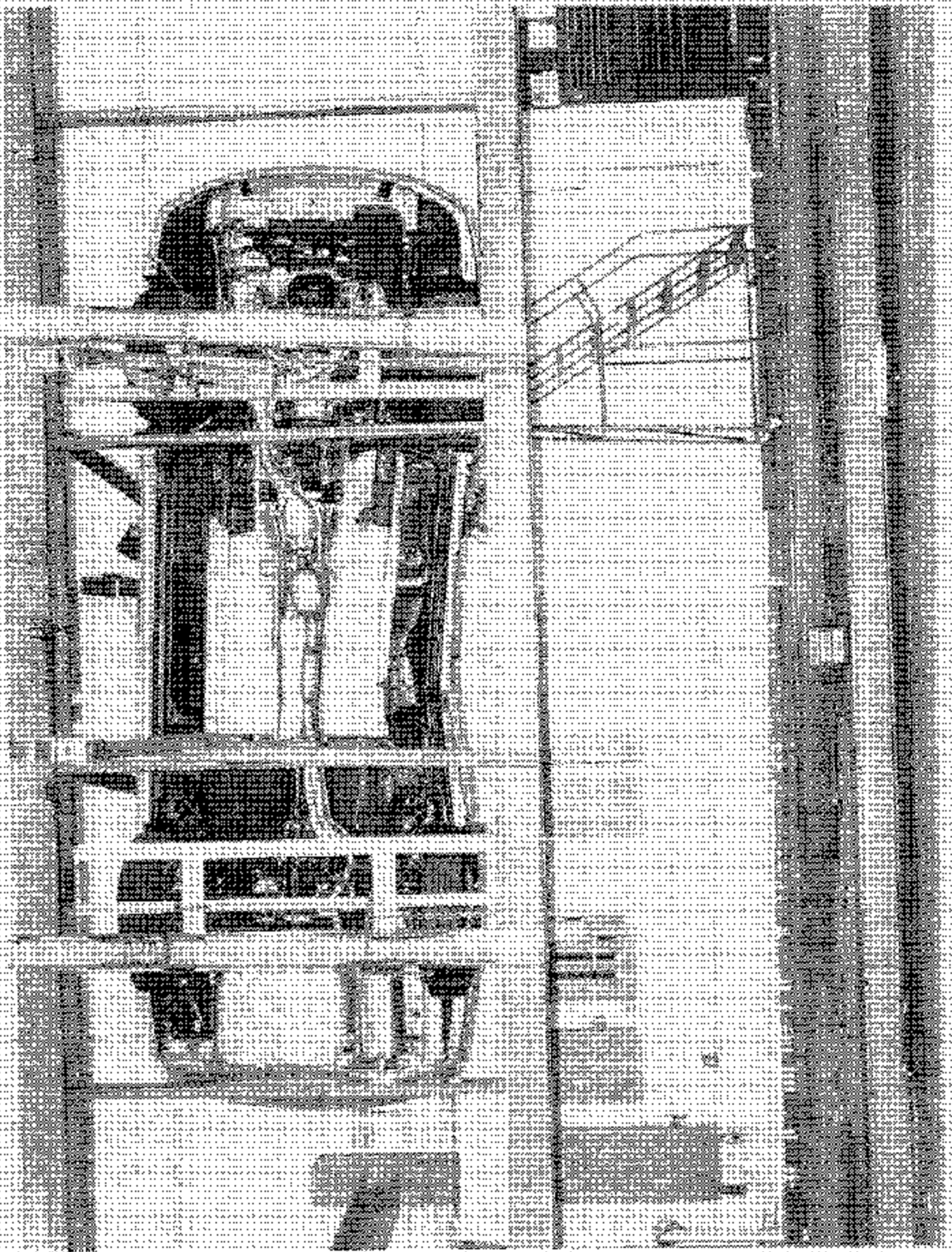


Figure A-57 FMVSS 301 Roll-over View at 270°

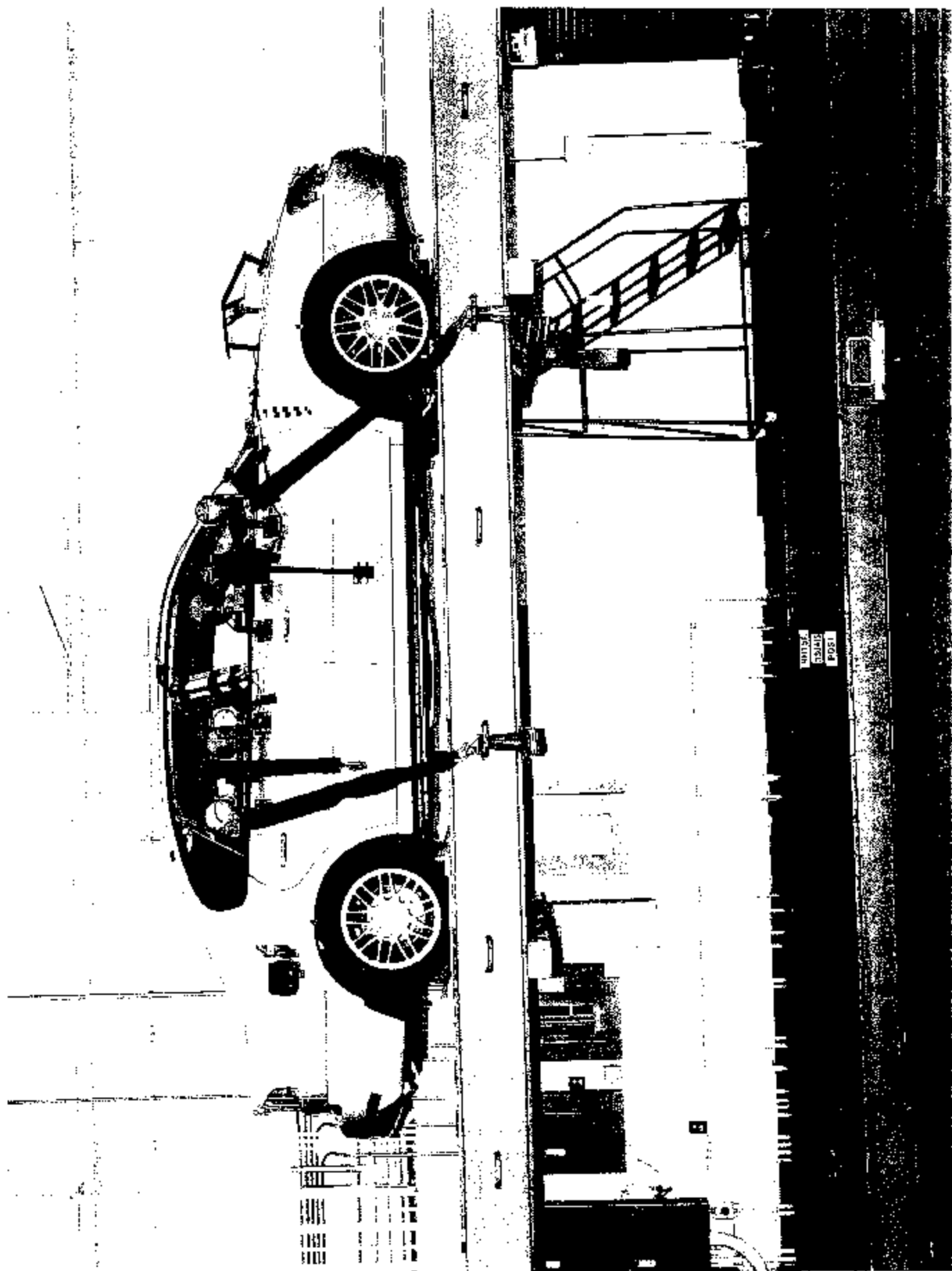


Figure A-58 FMVSS 301 Rollover View at 360°

Appendix B

Data Plots

Table of Data Plots

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	Driver Head X-Axis Acceleration	B-10
2	Driver Head X-Axis Velocity	B-11
3	Driver Head Y-Axis Acceleration	B-12
4	Driver Head Y-Axis Velocity	B-13
5	Driver Head Z-Axis Acceleration	B-14
6	Driver Head Z-Axis Velocity	B-15
7	Driver Head Resultant Acceleration	B-16
8	Driver Neck X-Axis Shear Force	B-17
9	Driver Neck Y-Axis Shear Force	B-18
10	Driver Neck Z-Axis Axial Force	B-19
11	Driver Neck Moment about X Axis	B-20
12	Driver Neck Moment about Y Axis	B-21
13	Driver Neck Moment about Z Axis	B-22
14	Driver Neck Occipital Condyle Moment about X Axis	B-23
15	Driver Upper Rib Y-Axis Acceleration	B-24
16	Driver Upper Rib Y-Axis Velocity	B-25
17	Driver Lower Rib Y-Axis Acceleration	B-26
18	Driver Lower Rib Y-Axis Velocity	B-27
19	Driver Lower Spine Y-Axis Acceleration	B-28
20	Driver Lower Spine Y-Axis Velocity	B-29
21	Driver Pelvis Y-Axis Acceleration	B-30
22	Driver Pelvis Y-Axis Velocity	B-31
23	Left Rear Passenger Head X-Axis Acceleration	B-32
24	Left Rear Passenger Head X-Axis Velocity	B-33
25	Left Rear Passenger Head Y-Axis Acceleration	B-34
26	Left Rear Passenger Head Y-Axis Velocity	B-35
27	Left Rear Passenger Head Z-Axis Acceleration	B-36

Table of Data Plots (Continued)

Driver and Passenger Dummy Instrumentation Plots (Continued)

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
28	Left Rear Passenger Head Z-Axis Velocity	B-37
29	Left Rear Passenger Head Resultant Acceleration	B-38
30	Left Rear Passenger Neck X-Axis Shear Force	B-39
31	Left Rear Passenger Neck Y-Axis Shear Force	B-40
32	Left Rear Passenger Neck Z-Axis Axial Force	B-41
33	Left Rear Passenger Neck Moment about X Axis	B-42
34	Left Rear Passenger Neck Moment about Y Axis	B-43
35	Left Rear Passenger Neck Moment about Z Axis	B-44
36	Left Rear Passenger Neck Occipital Condyle Moment about X Axis	B-45
37	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-46
38	Left Rear Passenger Upper Rib Y-Axis Velocity	B-47
39	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-48
40	Left Rear Passenger Lower Rib Y-Axis Velocity	B-49
41	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-50
42	Left Rear Passenger Lower Spine Y-Axis Velocity	B-51
43	Left Rear Passenger Pelvis Y-Axis Acceleration	B-52
44	Left Rear Passenger Pelvis Y-Axis Velocity	B-53

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 180 - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
45	Driver Head X-Axis Redundant Acceleration	B-55
46	Driver Head X-Axis Redundant Velocity	B-56
47	Driver Head Y-Axis Redundant Acceleration	B-57
48	Driver Head Y-Axis Redundant Velocity	B-58

Table of Data Plots (Continued)

Driver and Passenger Dummy Instrumentation Plots (Continued)

Acceleration Data - Filter Class 1000 - Redundant

Integration Data - Filter Class 180 - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
49	Driver Head Z-Axis Redundant Acceleration	B-59
50	Driver Head Z-Axis Redundant Velocity	B-60
51	Driver Head Resultant Redundant Acceleration	B-61
52	Driver Upper Rib Y-Axis Redundant Acceleration	B-62
53	Driver Upper Rib Y-Axis Redundant Velocity	B-63
54	Driver Lower Rib Y-Axis Redundant Acceleration	B-64
55	Driver Lower Rib Y-Axis Redundant Velocity	B-65
56	Driver Lower Spine Y-Axis Redundant Acceleration	B-66
57	Driver Lower Spine Y-Axis Redundant Velocity	B-67
58	Driver Pelvis Y-Axis Redundant Acceleration	B-68
59	Driver Pelvis Y-Axis Redundant Velocity	B-69
60	Left Rear Passenger Head X-Axis Redundant Acceleration	B-70
61	Left Rear Passenger Head X-Axis Redundant Velocity	B-71
62	Left Rear Passenger Head Y-Axis Redundant Acceleration	B-72
63	Left Rear Passenger Head Y-Axis Redundant Velocity	B-73
64	Left Rear Passenger Head Z-Axis Redundant Acceleration	B-74
65	Left Rear Passenger Head Z-Axis Redundant Velocity	B-75
66	Left Rear Passenger Head Resultant Redundant Acceleration	B-76
67	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-77
68	Left Rear Passenger Upper Rib Y-Axis Redundant Velocity	B-78
69	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-79
70	Left Rear Passenger Lower Rib Y-Axis Redundant Velocity	B-80
71	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-81
72	Left Rear Passenger Lower Spine Y-Axis Redundant Velocity	B-82
73	Left Rear Passenger Pelvis Y-Axis Redundant Acceleration	B-83
74	Left Rear Passenger Pelvis Y-Axis Redundant Velocity	B-84

Table of Data Plots (Continued)
Test Vehicle Instrumentation Plots
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
75	Right Side Sill at Front Seat X-Axis Acceleration	B-86
76	Right Side Sill at Front Seat X-Axis Velocity	B-87
77	Right Side Sill at Front Seat Y-Axis Acceleration	B-88
78	Right Side Sill at Front Seat Y-Axis Velocity	B-89
79	Right Side Sill at Front Seat Z-Axis Acceleration	B-90
80	Right Side Sill at Front Seat Z-Axis Velocity	B-91
81	Right Side Sill at Front Seat Resultant Acceleration	B-92
82	Right Side Sill at Rear Seat X-Axis Acceleration	B-93
83	Right Side Sill at Rear Seat X-Axis Velocity	B-94
84	Right Side Sill at Rear Seat Y-Axis Acceleration	B-95
85	Right Side Sill at Rear Seat Y-Axis Velocity	B-96
86	Right Side Sill at Rear Seat Z-Axis Acceleration	B-97
87	Right Side Sill at Rear Seat Z-Axis Velocity	B-98
88	Right Side Sill at Rear Seat Resultant Acceleration	B-99
89	Rear Floorpan Above Axle X-Axis Acceleration	B-100
90	Rear Floorpan Above Axle X-Axis Velocity	B-101
91	Rear Floorpan Above Axle Y-Axis Acceleration	B-102
92	Rear Floorpan Above Axle Y-Axis Velocity	B-103
93	Rear Floorpan Above Axle Z-Axis Acceleration	B-104
94	Rear Floorpan Above Axle Z-Axis Velocity	B-105
95	Rear Floorpan Above Axle Resultant Acceleration	B-106
96	Left Side Sill at Front Seat Y-Axis Acceleration	B-107
97	Left Side Sill at Front Seat Y-Axis Velocity	B-108
98	Left Side Sill at Front Seat Y-Axis Displacement	B-109
99	Left Side Sill at Rear Seat Y-Axis Acceleration	B-110
100	Left Side Sill at Rear Seat Y-Axis Velocity	B-111
101	Left Side Sill at Rear Seat Y-Axis Displacement	B-112
102	Left Front Door on Centerline Y-Axis Acceleration	B-113
103	Left Front Door on Centerline Y-Axis Velocity	B-114

Table of Data Plots (Continued)
Test Vehicle Instrumentation Plots (Continued)
Acceleration Data - Filter Class 60
Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
104	Left Front Door on Centerline Y-Axis Displacement	B-115
105	Right Rear Occupant Compartment Y-Axis Acceleration	B-116
106	Right Rear Occupant Compartment Y-Axis Velocity	B-117
107	Right Rear Occupant Compartment Y-Axis Displacement	B-118
108	Left Front Door Mid-Rear Y-Axis Acceleration	B-119
109	Left Front Door Mid-Rear Y-Axis Velocity	B-120
110	Left Front Door Mid-Rear Y-Axis Displacement	B-121
111	Left Front Door Upper Centerline Y-Axis Acceleration	B-122
112	Left Front Door Upper Centerline Y-Axis Velocity	B-123
113	Left Front Door Upper Centerline Y-Axis Displacement	B-124
114	Left Rear Door Mid-Rear Y-Axis Acceleration	B-125
115	Left Rear Door Mid-Rear Y-Axis Velocity	B-126
116	Left Rear Door Mid-Rear Y-Axis Displacement	B-127
117	Left Rear Door Upper Centerline Y-Axis Acceleration	B-128
118	Left Rear Door Upper Centerline Y-Axis Velocity	B-129
119	Left Rear Door Upper Centerline Y-Axis Displacement	B-130
120	Left Lower A-Post Y-Axis Acceleration	B-131
121	Left Lower A-Post Y-Axis Velocity	B-132
122	Left Middle A-Post Y-Axis Acceleration	B-133
123	Left Middle A-Post Y-Axis Velocity	B-134
124	Left Lower B-Post Y-Axis Acceleration	B-135
125	Left Lower B-Post Y-Axis Velocity	B-136
126	Left Middle B-Post Y-Axis Acceleration	B-137
127	Left Middle B-Post Y-Axis Velocity	B-138
128	Left Front Seat Track Y-Axis Acceleration	B-139
129	Left Front Seat Track Y-Axis Velocity	B-140
130	Left Rear Seat Track Y-Axis Acceleration	B-141
131	Left Rear Seat Track Y-Axis Velocity	B-142
132	Vehicle Center of Gravity X-Axis Acceleration	B-143

Table of Data Plots (Continued)
 Test Vehicle Instrumentation Plots (Continued)
 Acceleration Data - Filter Class 60
 Integration Data - Filter Class 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
133	Vehicle Center of Gravity X-Axis Velocity	B-144
134	Vehicle Center of Gravity Y-Axis Acceleration	B-145
135	Vehicle Center of Gravity Y-Axis Velocity	B-146
136	Vehicle Center of Gravity Z-Axis Acceleration	B-147
137	Vehicle Center of Gravity Z-Axis Velocity	B-148
138	Vehicle Center of Gravity Resultant Acceleration	B-149

MDB Instrumentation Plots
 Acceleration Data - Filter Class 60
 Integration Data - Filter Class 180
 Contact Data - Filter Class 1000

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
139	MDB Center of Gravity X-Axis Acceleration	B-151
140	MDB Center of Gravity X-Axis Velocity	B-152
141	MDB Center of Gravity Y-Axis Acceleration	B-153
142	MDB Center of Gravity Y-Axis Velocity	B-154
143	MDB Center of Gravity Z-Axis Acceleration	B-155
144	MDB Center of Gravity Z-Axis Velocity	B-156
145	MDB Center of Gravity Resultant Acceleration	B-157
146	MDB Left Rear X-Axis Acceleration	B-158
147	MDB Left Rear X-Axis Velocity	B-159
148	MDB Left Rear Y-Axis Acceleration	B-160
149	MDB Left Rear Y-Axis Velocity	B-161
150	MDB Right Side Contact Switch	B-162
151	MDB Left Side Contact Switch	B-163

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Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered

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153	Driver Lower Rib Y-Axis Acceleration	B-166
154	Driver Lower Spine Y-Axis Acceleration	B-167
155	Driver Pelvis Y-Axis Acceleration	B-168
156	Left Rear Passenger Upper Rib Y-Axis Acceleration	B-169
157	Left Rear Passenger Lower Rib Y-Axis Acceleration	B-170
158	Left Rear Passenger Lower Spine Y-Axis Acceleration	B-171
159	Left Rear Passenger Pelvis Y-Axis Acceleration	B-172

Driver and Passenger Dummy Instrumentation Plots
Acceleration Data - FIR Filtered - Redundant

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
160	Driver Upper Rib Y-Axis Redundant Acceleration	B-174
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162	Driver Lower Spine Y-Axis Redundant Acceleration	B-176
163	Driver Pelvis Y-Axis Redundant Acceleration	B-177
164	Left Rear Passenger Upper Rib Y-Axis Redundant Acceleration	B-178
165	Left Rear Passenger Lower Rib Y-Axis Redundant Acceleration	B-179
166	Left Rear Passenger Lower Spine Y-Axis Redundant Acceleration	B-180
167	Left Rear Passenger Pelvis Y-Axis Redundant Acceleration	B-181

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000

Integration Data - Filter Class 180

Force Data - Filter Class 1000

Moment Data - Filter Class 600

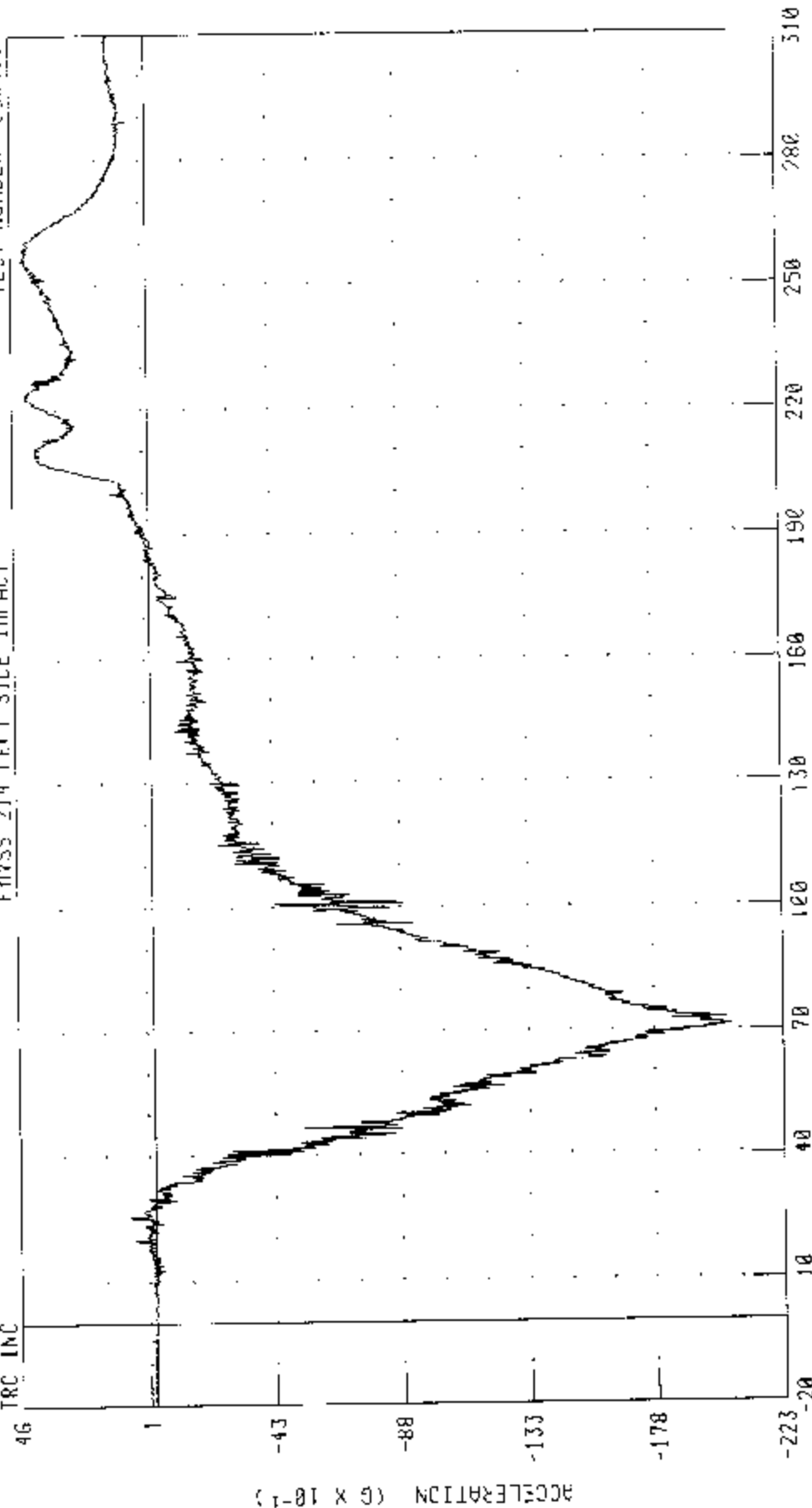
55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2000 SUBARU LEVANT

DRIVER HEAD X-AXIS ACCELERATION

FLYSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

TRC INC



TIME (MS)

PEAK DATA 4 J2 0 0 255 04 MS, -20 53 0 71 12 MS

CHANNEL HEDXG1 FILTER: CH. CLASS 1000

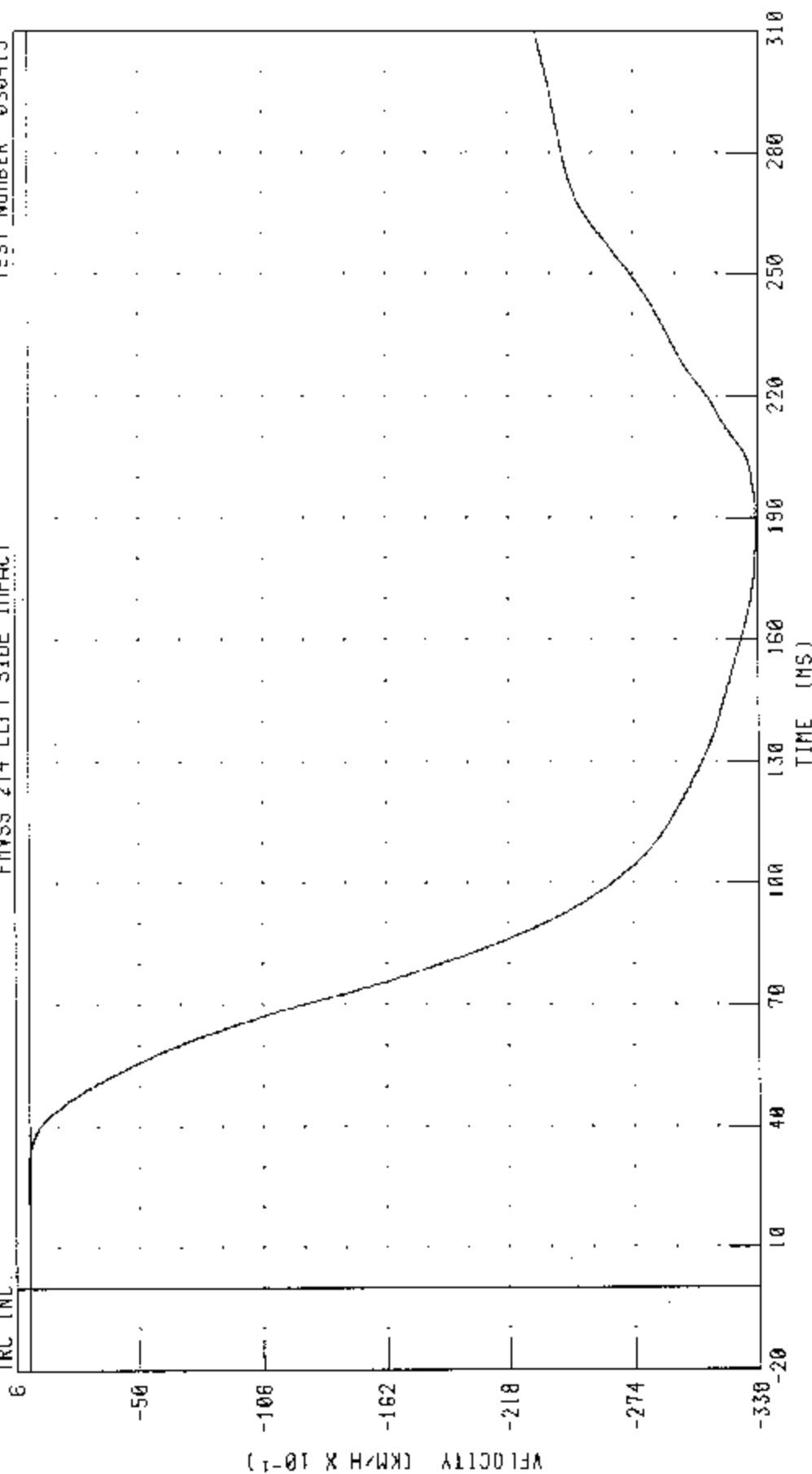
55/78 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER HEAD X-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

TRC INC.



TIME (MS)

PEAK DATA: 0 06 KN/H @ 28 24 MS; -52.90 KN/H @ 184 16 MS

CHANNEL: HEDXV1 FILTER: CH. CLASS 180

55/28 KPH 30 DEGREE SIDE IMPACT (MOVING DEFURTABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER PEDAL AXIS ACCELERATION

IRC INC

FWSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

ACCELERATION (G X 10⁻²)

TIME (MS)

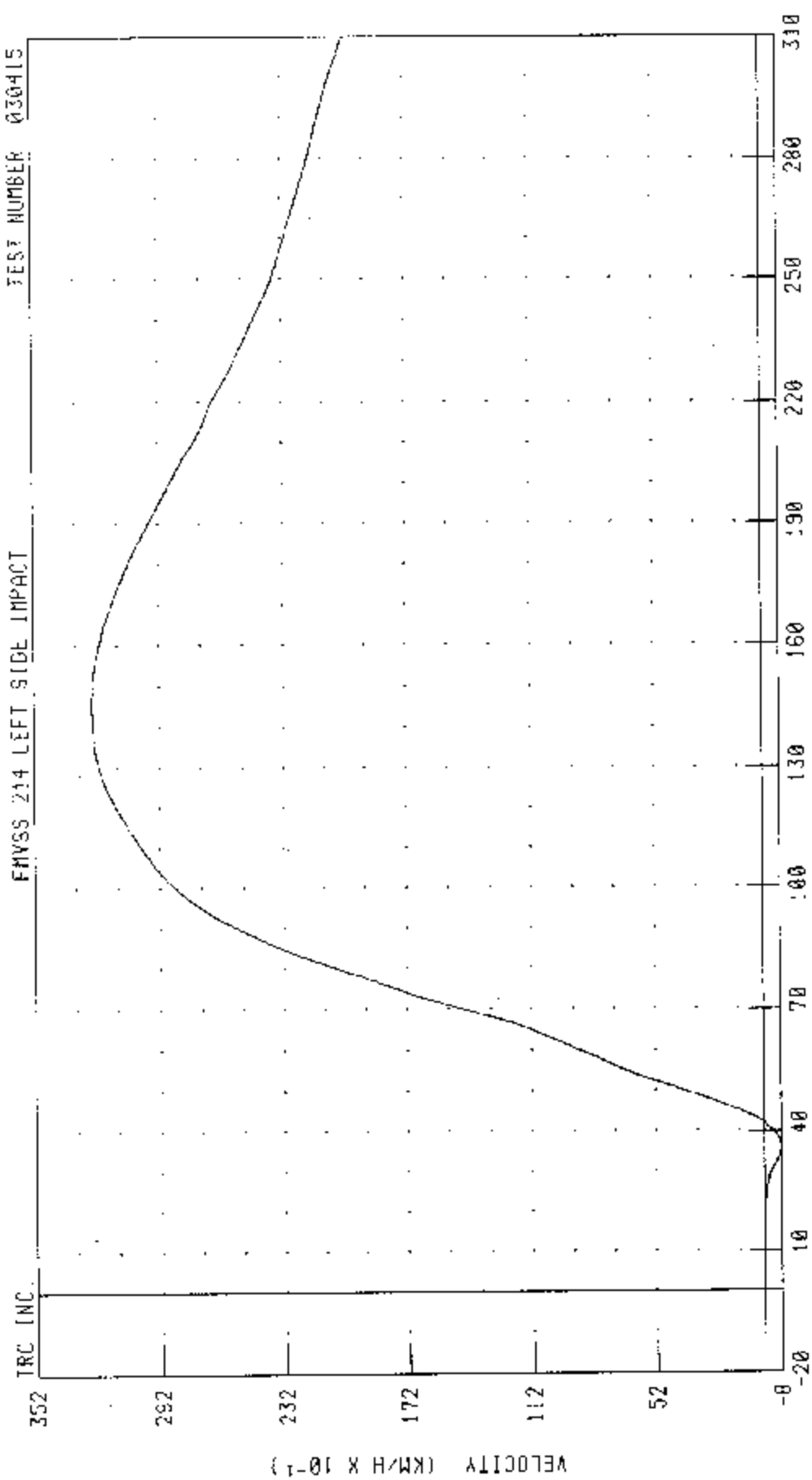
CHANNEL HEDYC1 FILTER CII CLASS 1000

PEAK DATA: 22 04 G @ 69 60 MS, -3 72 G @ 200 64 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER END Y-AXIS VELOCITY
FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER Q30415



TIME (MS)

PEAK DATA: 32.40 KM/H @ 145.20 MS, -0.79 KM/H @ 35.92 MS

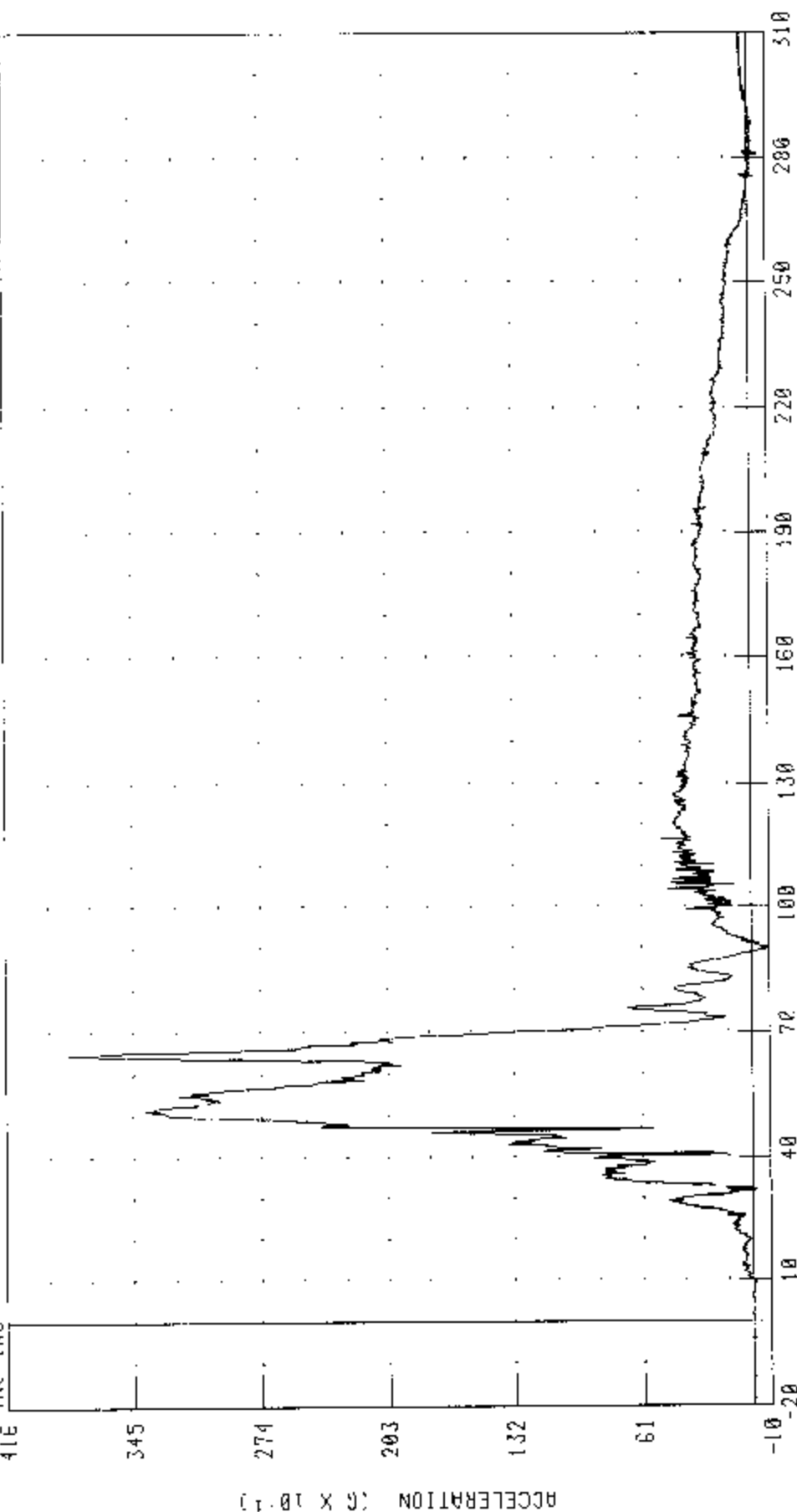
CHANNEL HEDYV1 FILTER CH CLASS 180

55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE CARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER HEAD Z-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER H3W-15

TRC INC



TIME (MS)

PEAK DATA: 38.16 G @ 64 MS, 0.92 G @ 89 MS

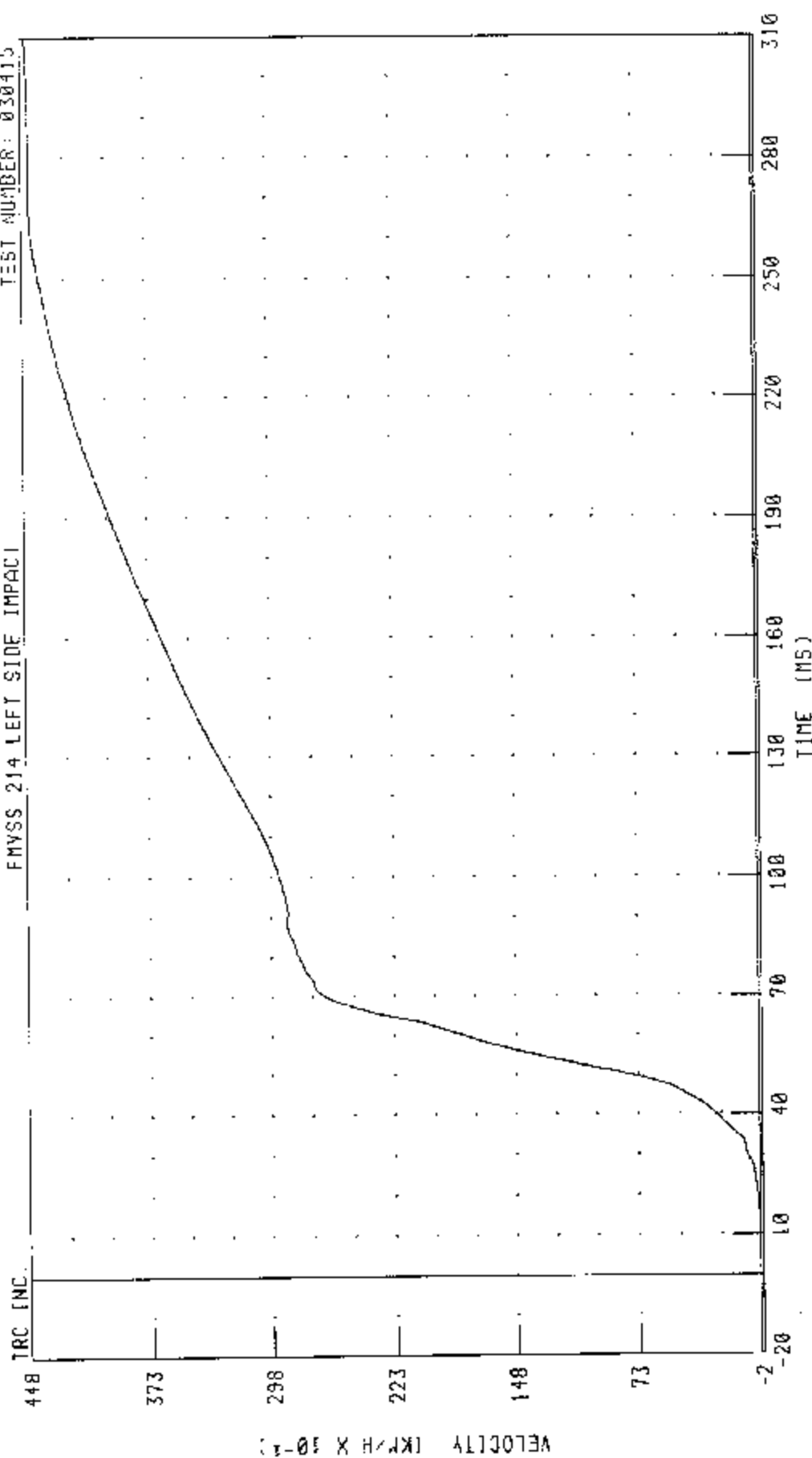
CHANNEL HEDZ61 FILTER CH CLASS 1000

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER HEAD Z-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415



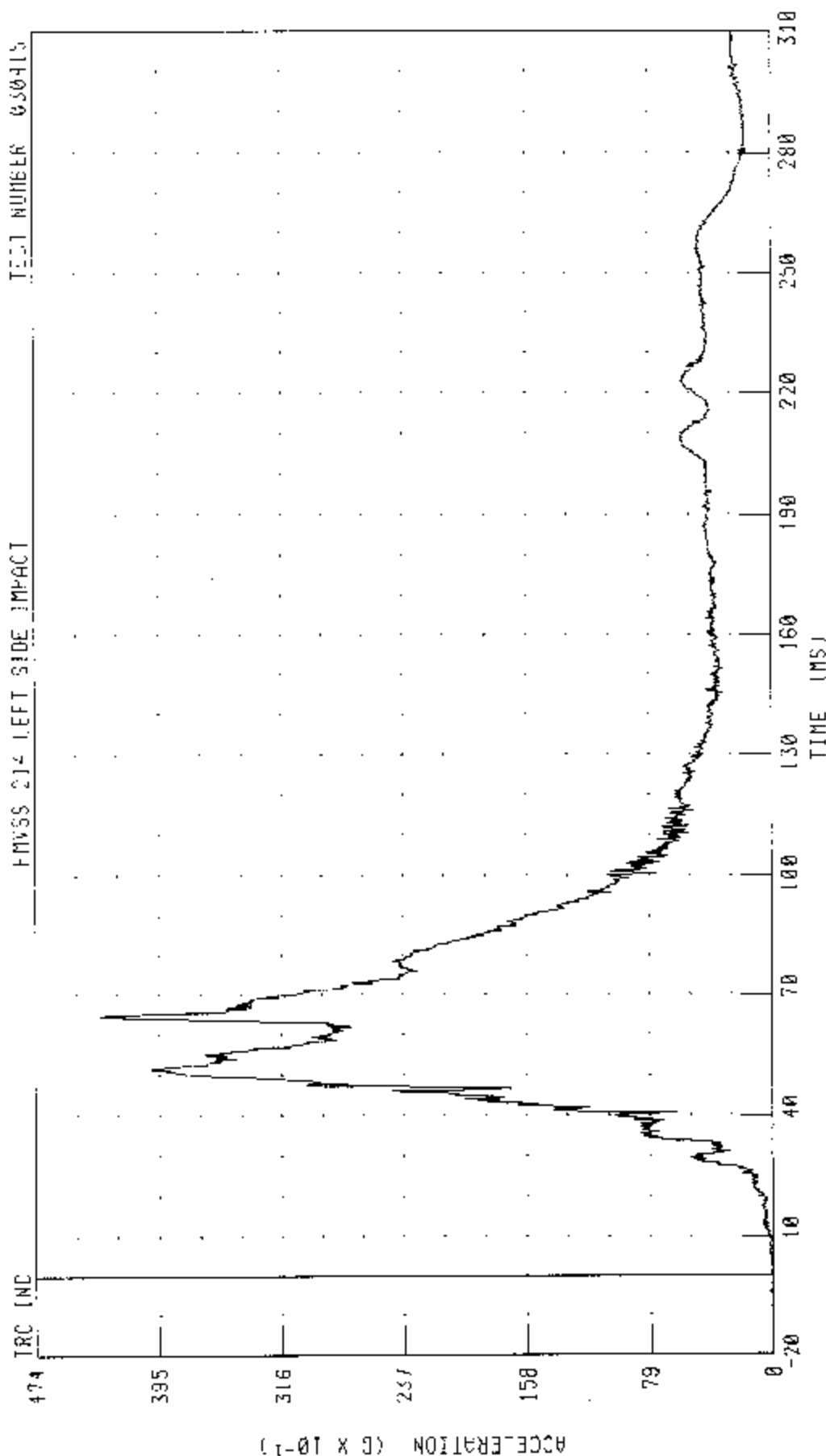
PEAK DATA: 44.56 KM/H @ 310.00 MS; -0.01 KM/H @ 0.976 MS

CHANNEL: HEADZV1 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER HEAD RESTRAINT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



CHANNEL HED01 FILTER: CH. CLASS 1000

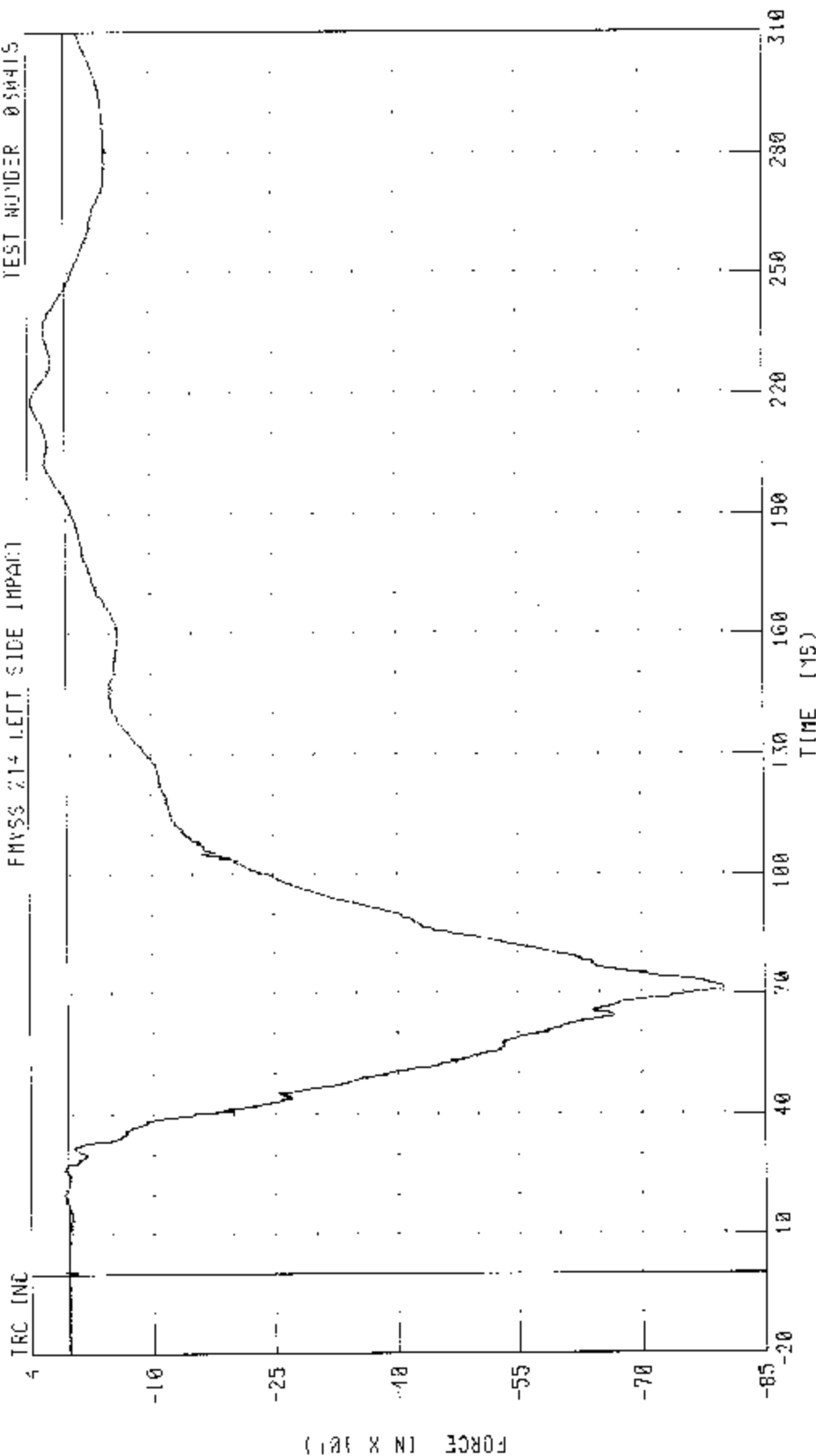
PEAK DATA: 43.21 G @ 64.64 MS; H 01 G @ -17.52 MS

55.28 KPH 50 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER NECK X-AXIS SHEAR FORCE

FNVS 214 LEFT SIDE IMPACT

TEST NUMBER 050415



TIME (MS)

PEAK VALUE: 41 96 N @ 217 84 MS, 804 69 N @ 71 12 MS

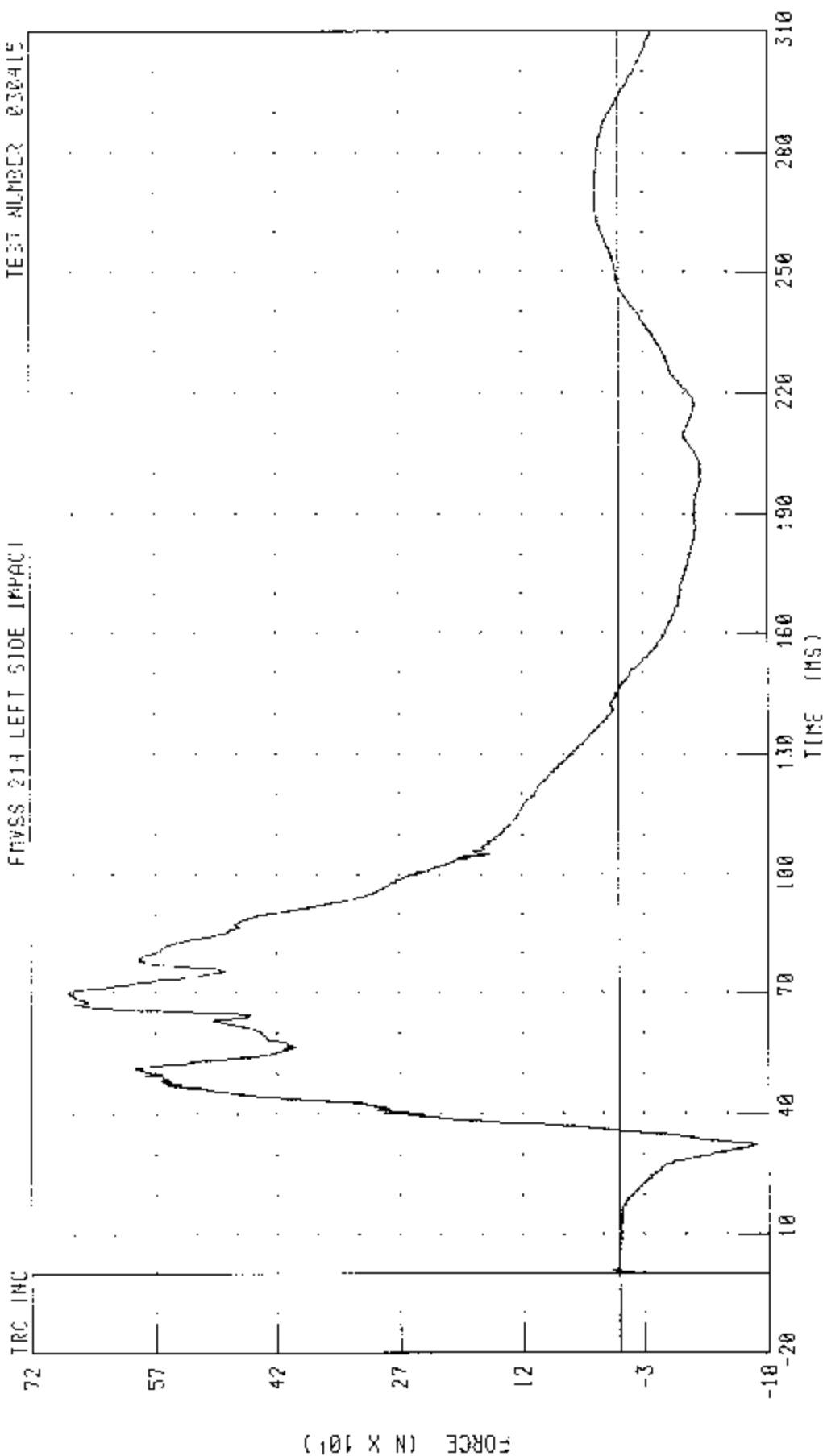
CHANNEL: NEKXT1 FILTER: CH. CLASS 1000

55.20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBURU LEGACY

DRIVER NECK Y AXIS SHEAR FORCE

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: B30415



CHANNEL: NEKYF: FILTER: CH CLASS 1000

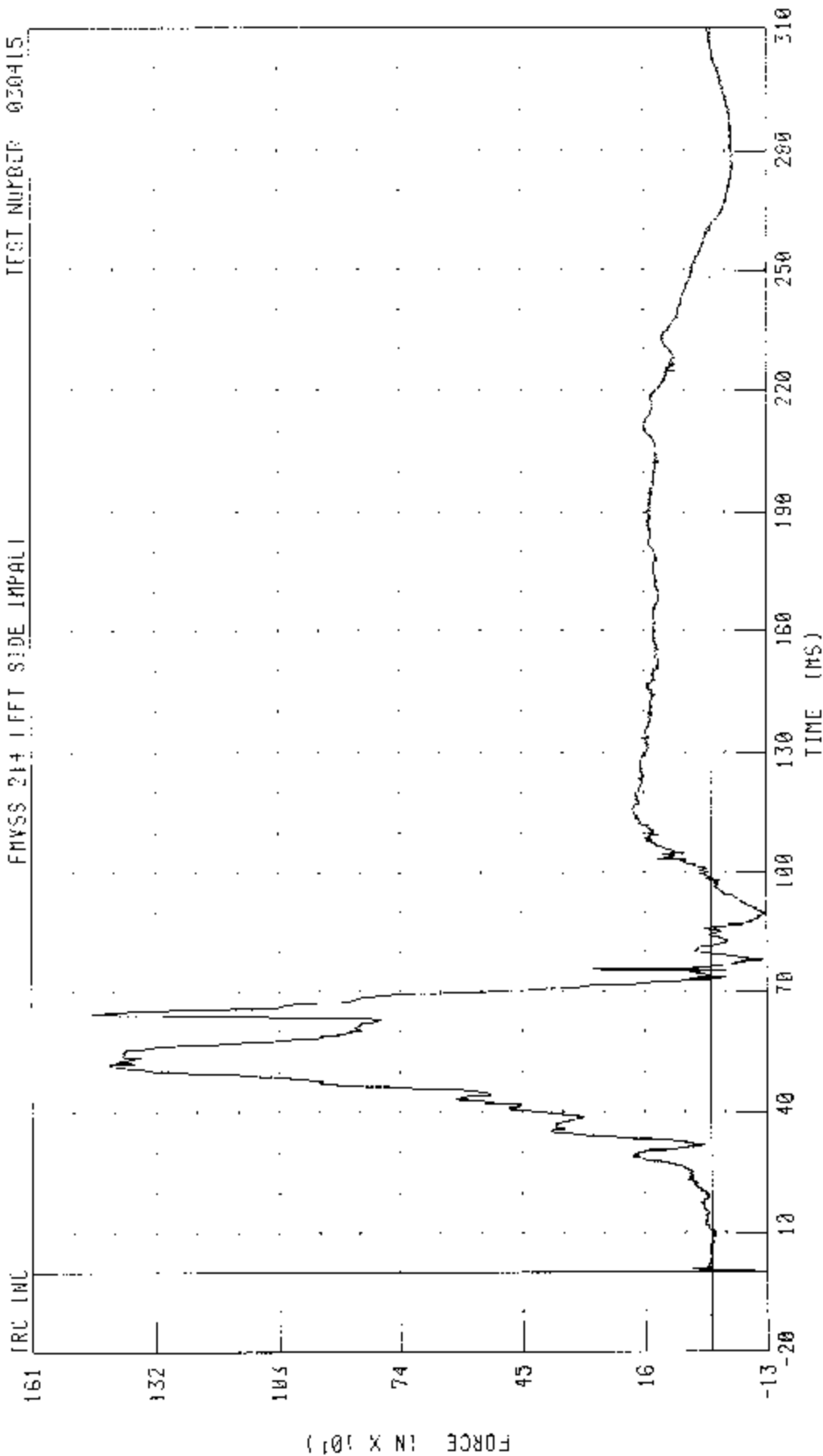
PEAK DATA: 676 27 N @ 70 08 MS, -165 89 N @ 32 48 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBURU (FORD)

DRIVER NECK Z-AXIS AXIAL FORCE

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



CHANNEL: NEKZF1 FILTER: CH CLASS: 1000

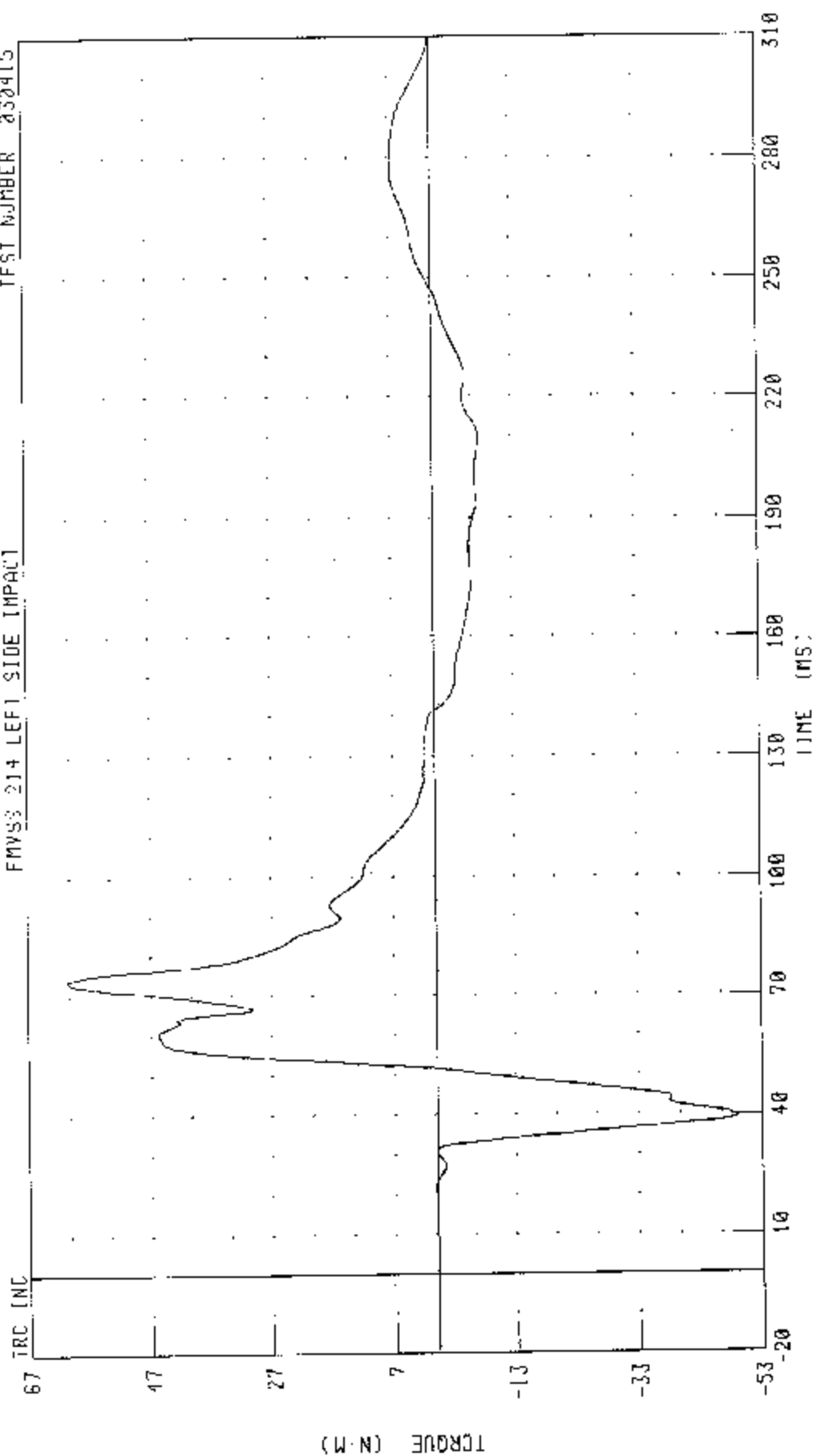
PEAK DATA: 1463.65 N @ 64.72 ms, -125.18 N @ 89.84 ms

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER NECK MOMENT ABOUT X AXIS

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



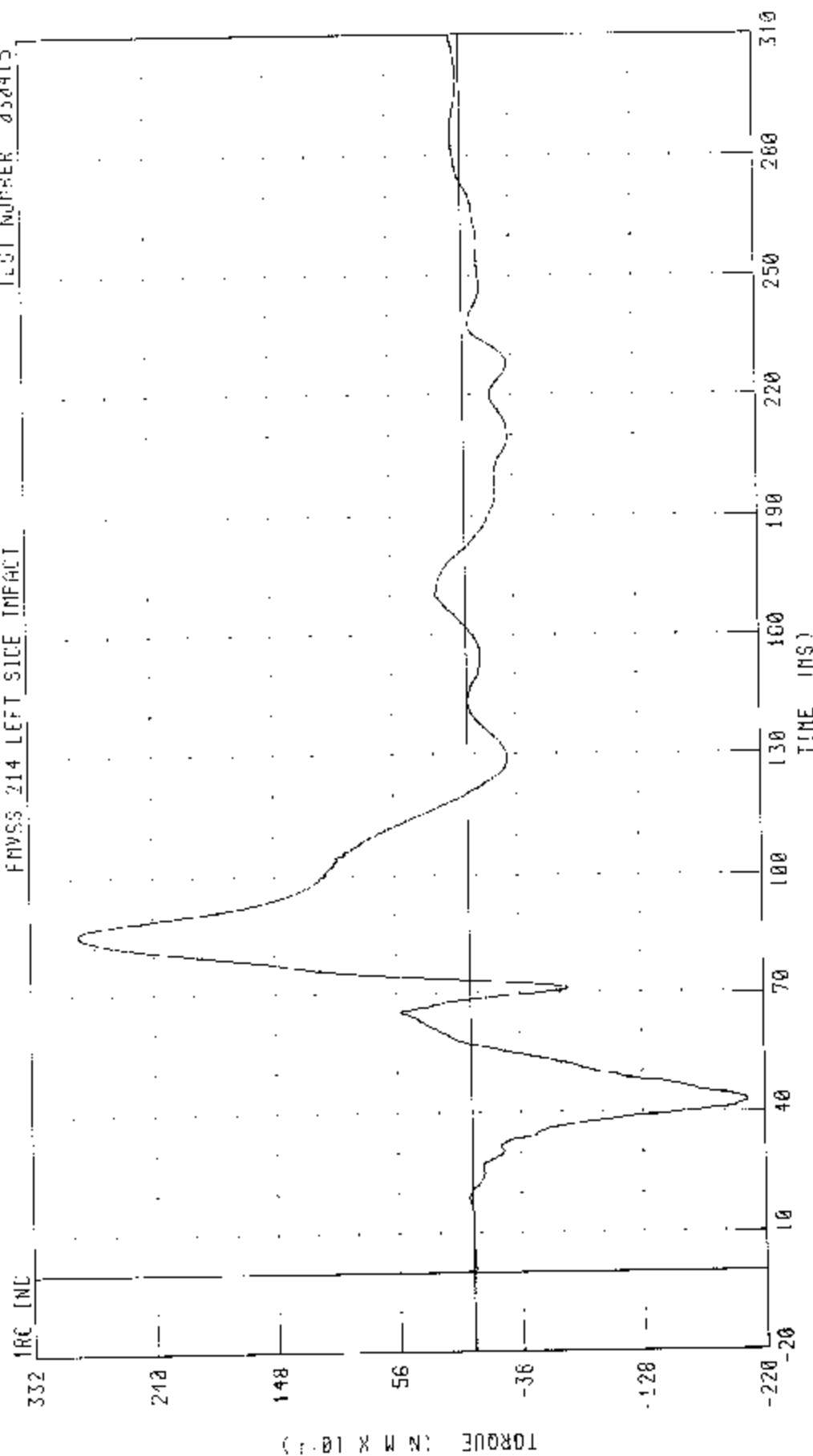
PFM DATA: 60.83 N M @ 73.52 MS; -48.98 V M @ 39.44 MS

CHANNEL: NEKX01 FILTER: CH. CLASS 600

55-28 KPH 50 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER NECK MOMENT ABOUT X AXIS

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 050415



CHANNEL: NEKYM1 FILTER: CH. C_ASS 600

PEAK DATA: 29.63 N M @ 65.44 MS, -20.62 N M @ 42.80 MS

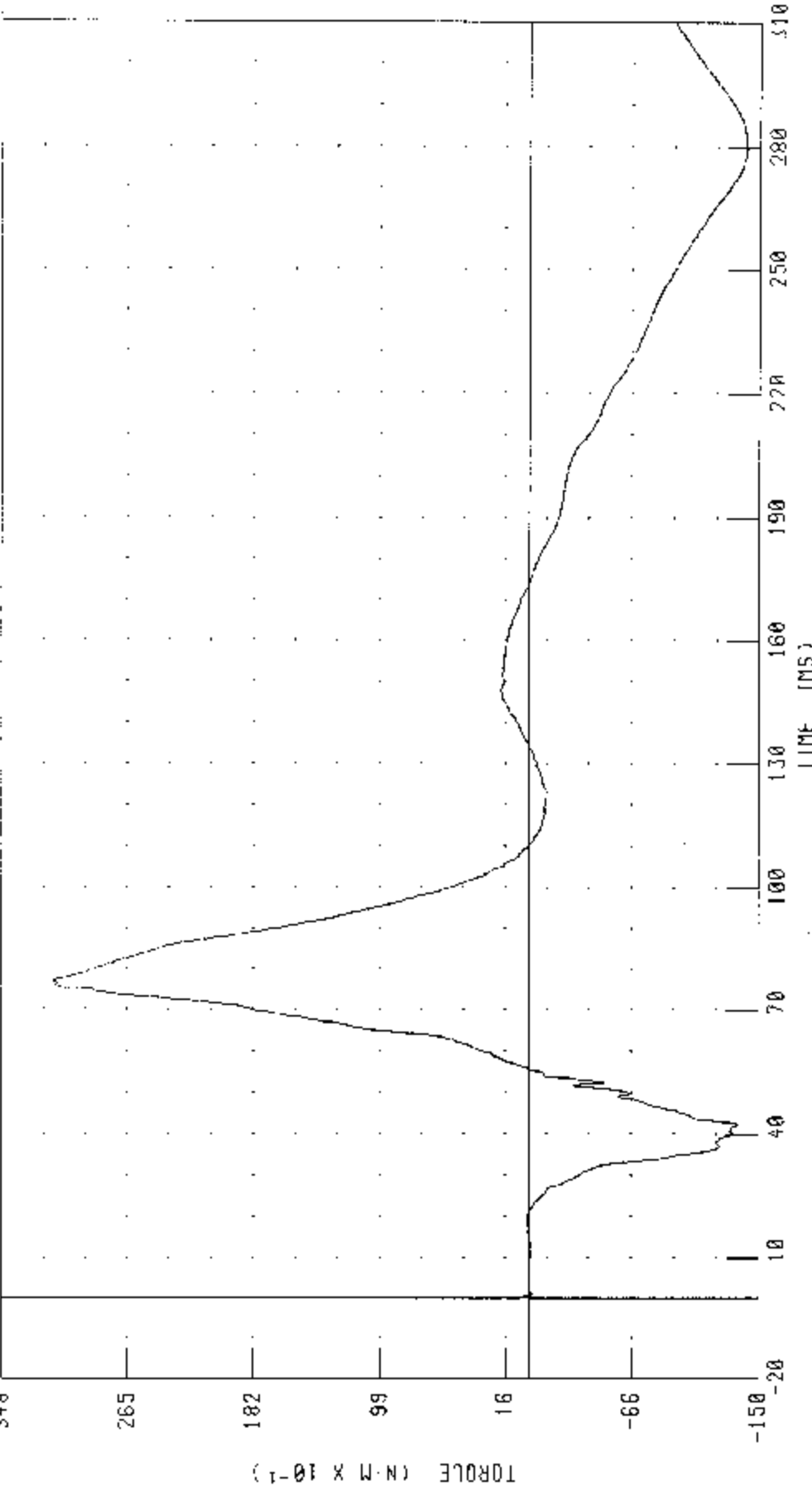
55-20 KPH @ DEGREE SIDE IMPACT INVOLVING DEFENSIBLE SIDERER; INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER NECK MOMENT ABOUT Z AXIS

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



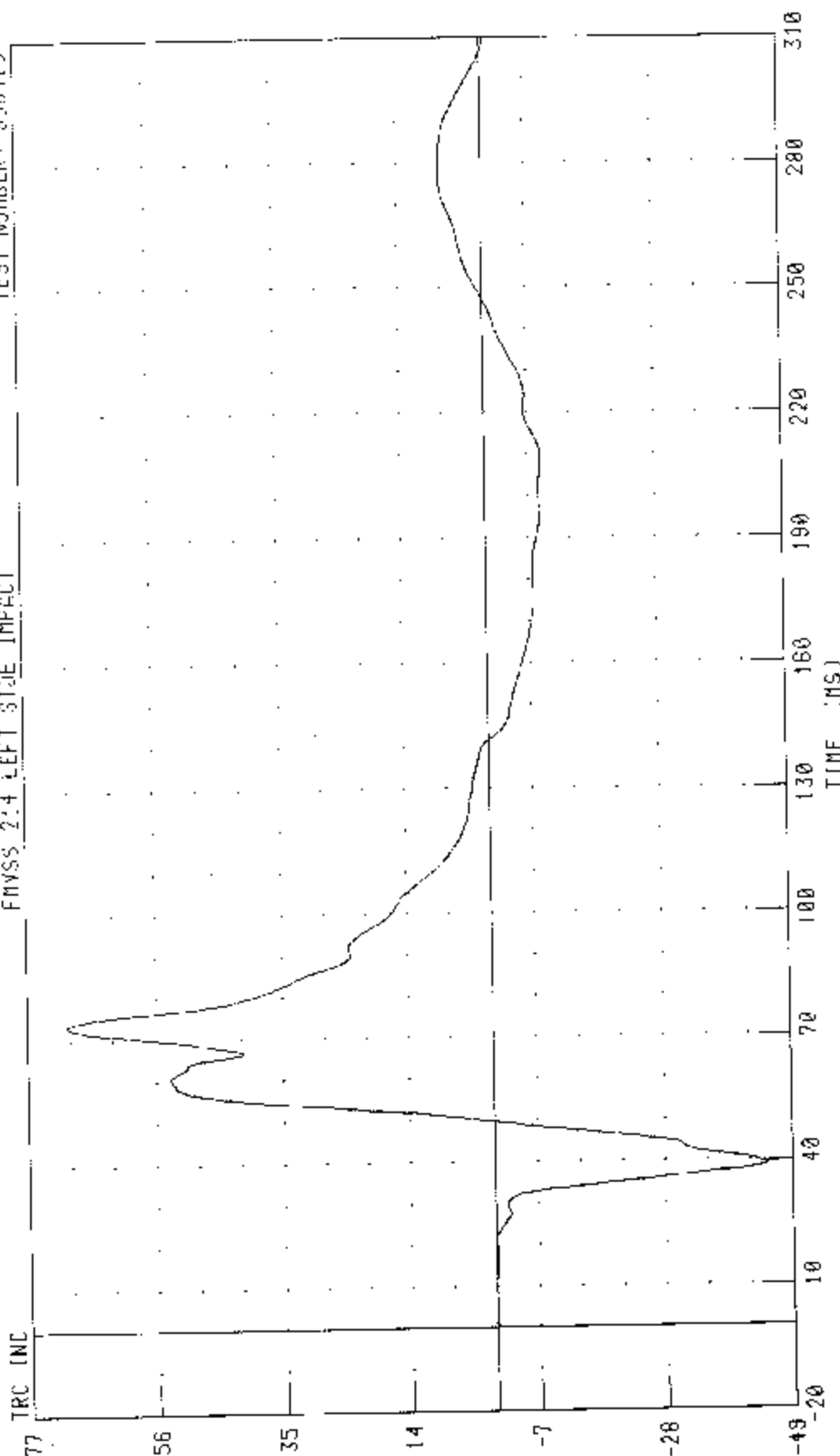
PEAK DATA: 31 47 N-M @ 77 20 MS; -14 14 N-M @ 280 64 MS

CHANNEL: NEKZM1 FILTER: CH CLASS 600

55/26 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARREL) INTO LEFT SIDE OF TRUCK SUBURBAN LEGACY

DRIVER NECK COLLISION CONCYLF MOMENT ABOUT X AXIS

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 230415



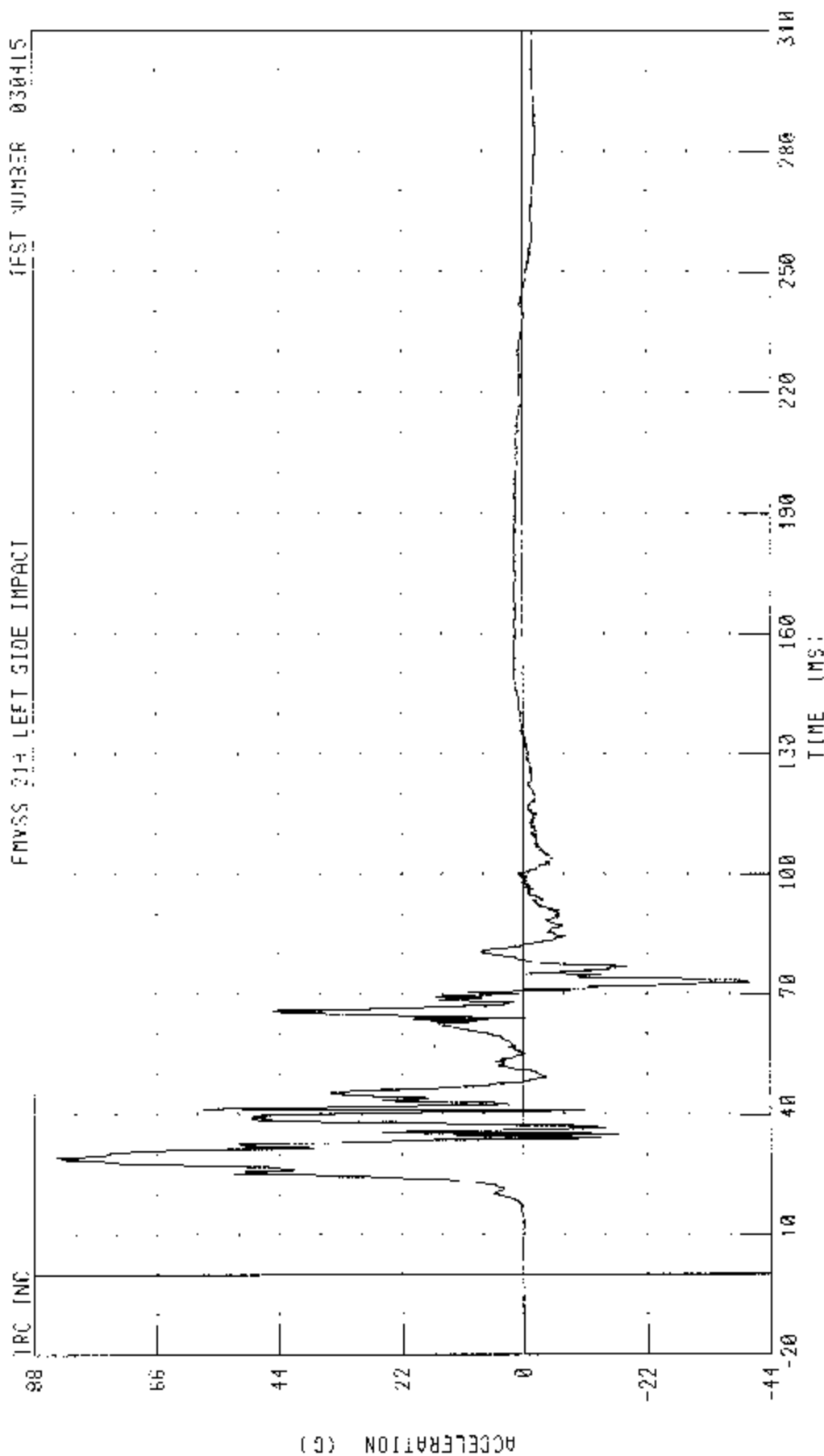
PEAK DATA: 70 73 N M 0 73 44 NS; -44 00 N M 0 39 36 MS

CHANNEL: NK0XN1 FILTER: CH CLASS 600

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BAR) INTO LEFT SIDE OF 2003 SUBBUCK FEMOXY

DRIVER UPPER RIB Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



TIME (MS)

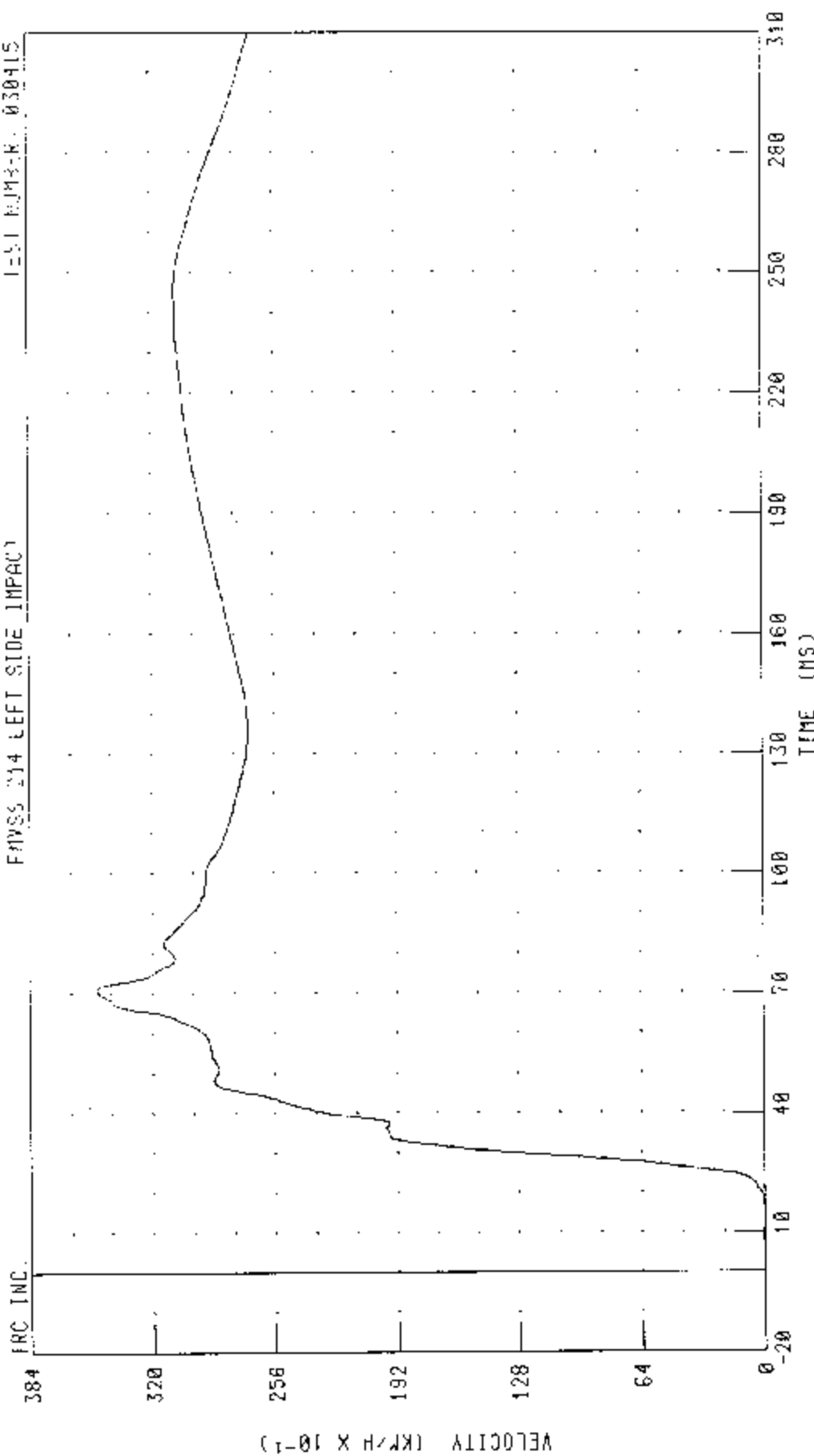
CHANNEL LURYG1 FILTER CH CLASS 1000

PEAK DATA: 84.15 G @ 29.36 MS; -40.05 G @ 75.04 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBURB 1500V

DRIVER UPPER RIB Y-AXIS VELOCITY

FRYSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415



PFAP DATA: 34.92 KM/H @ 70.88 MS, 0.00 KM/H @ 0.00 MS

CHANNEL: LURVY1 FILTER: CH. CLASS 180

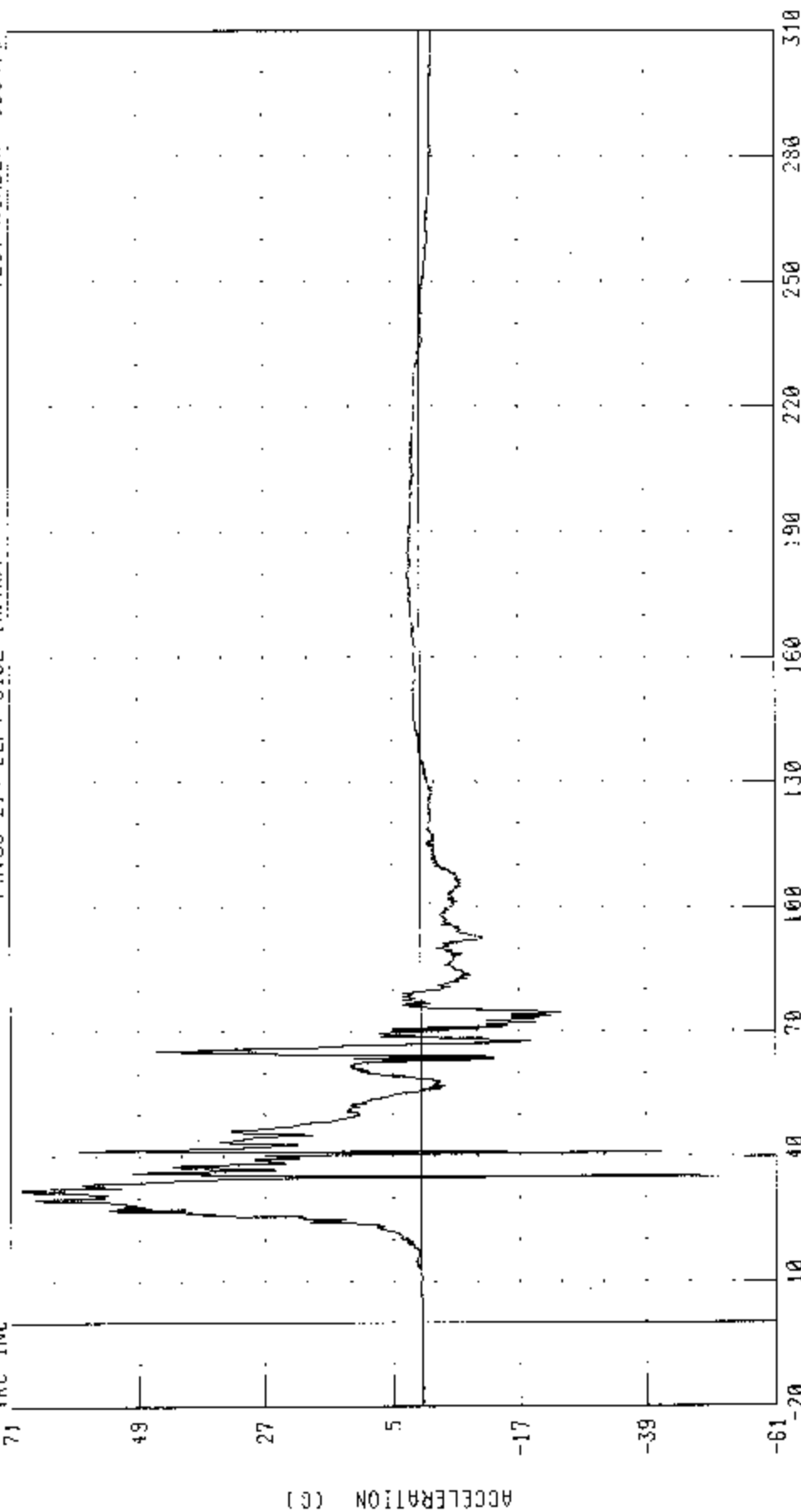
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIG YFR LOWER RIG Y AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



CHANNEL: LLRYG1 FILTER: CH CLASS 1000

PEAK DATA 63.19 G @ 31.84 MS, -55.50 G @ 35.20 MS

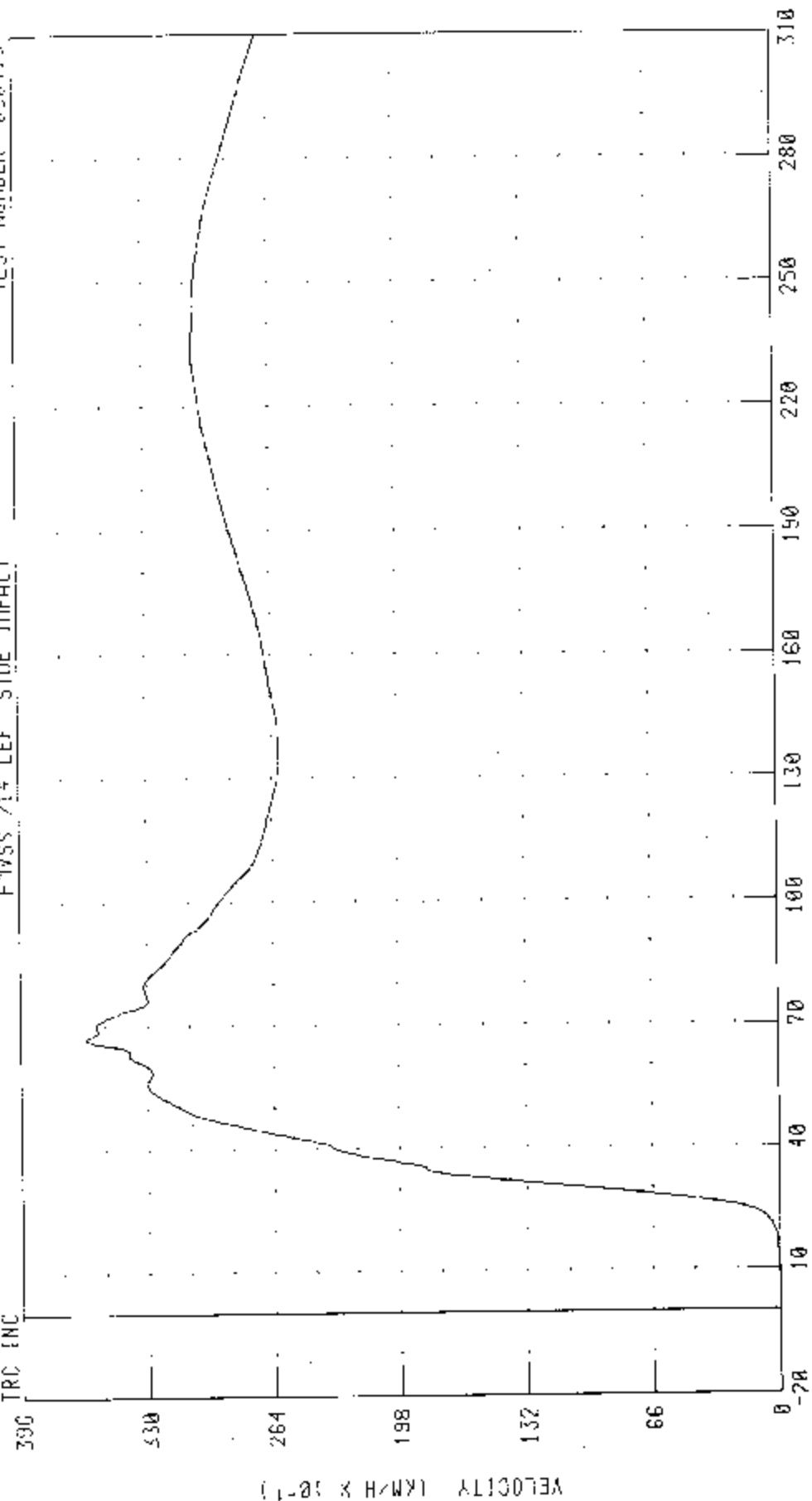
55-28 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER IN LEFT SIDE OF 2003 SUHARU LEGACY

DRIVER LOWER RIB T-AXIS VELOCITY

FWSS 714 LEFT SIDE IMPACT

TEST NUMBER 030415

TRC INC



CHANNEL: LLRYV1 FILTER: CH. CLASS 180

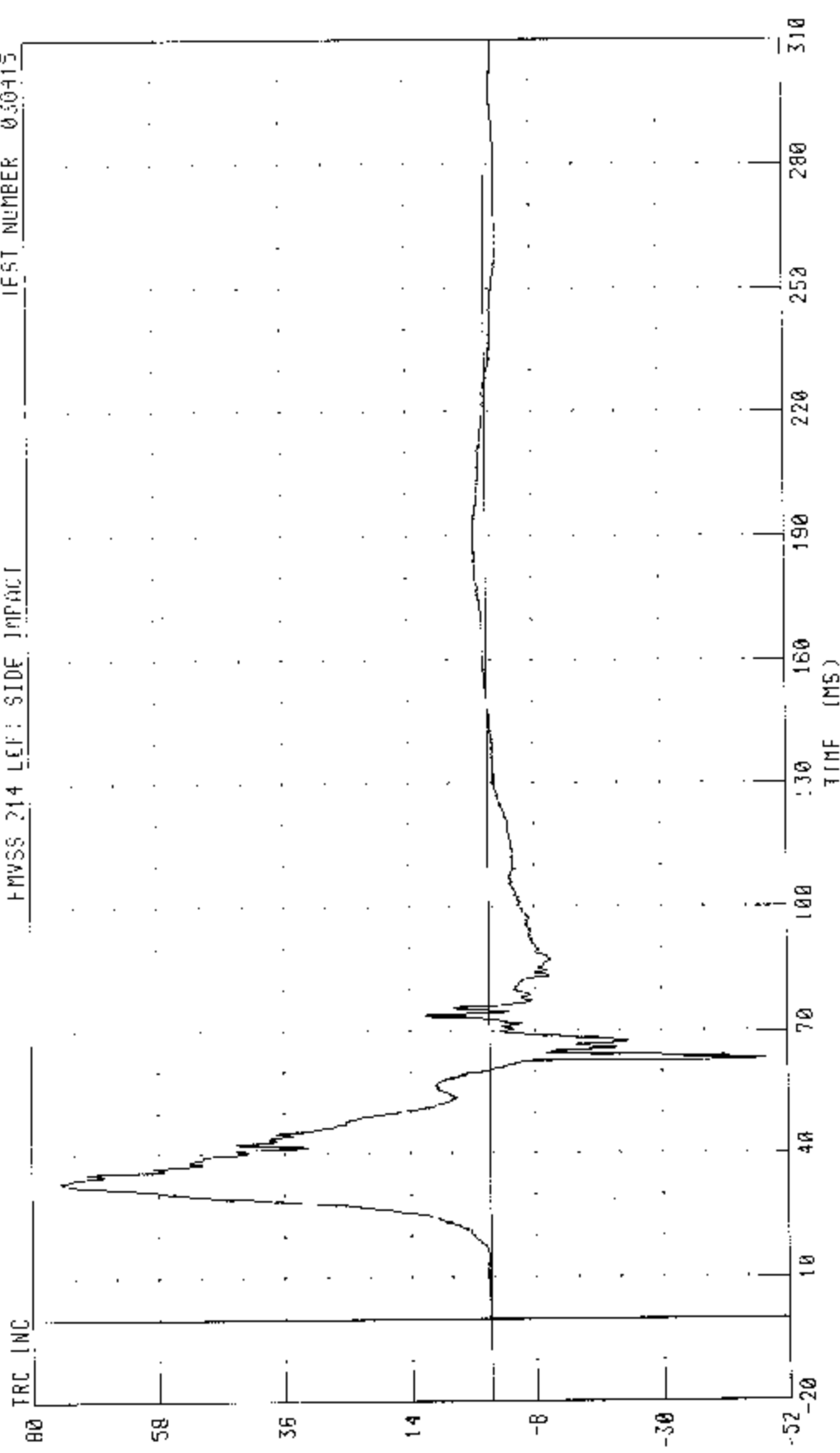
PEAK DATA 36 16 KPH/11 67.04 MS, 0.00 KPH/11 0 0 00 MS

55/28 <PH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER LOWER SPINE X-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



PEAK DATA 74 95 0 0 33 28 MS, -47.91 0 0 33 28 MS

CHANNEL: T12YC1 FILTER: CH. CLASS 1000

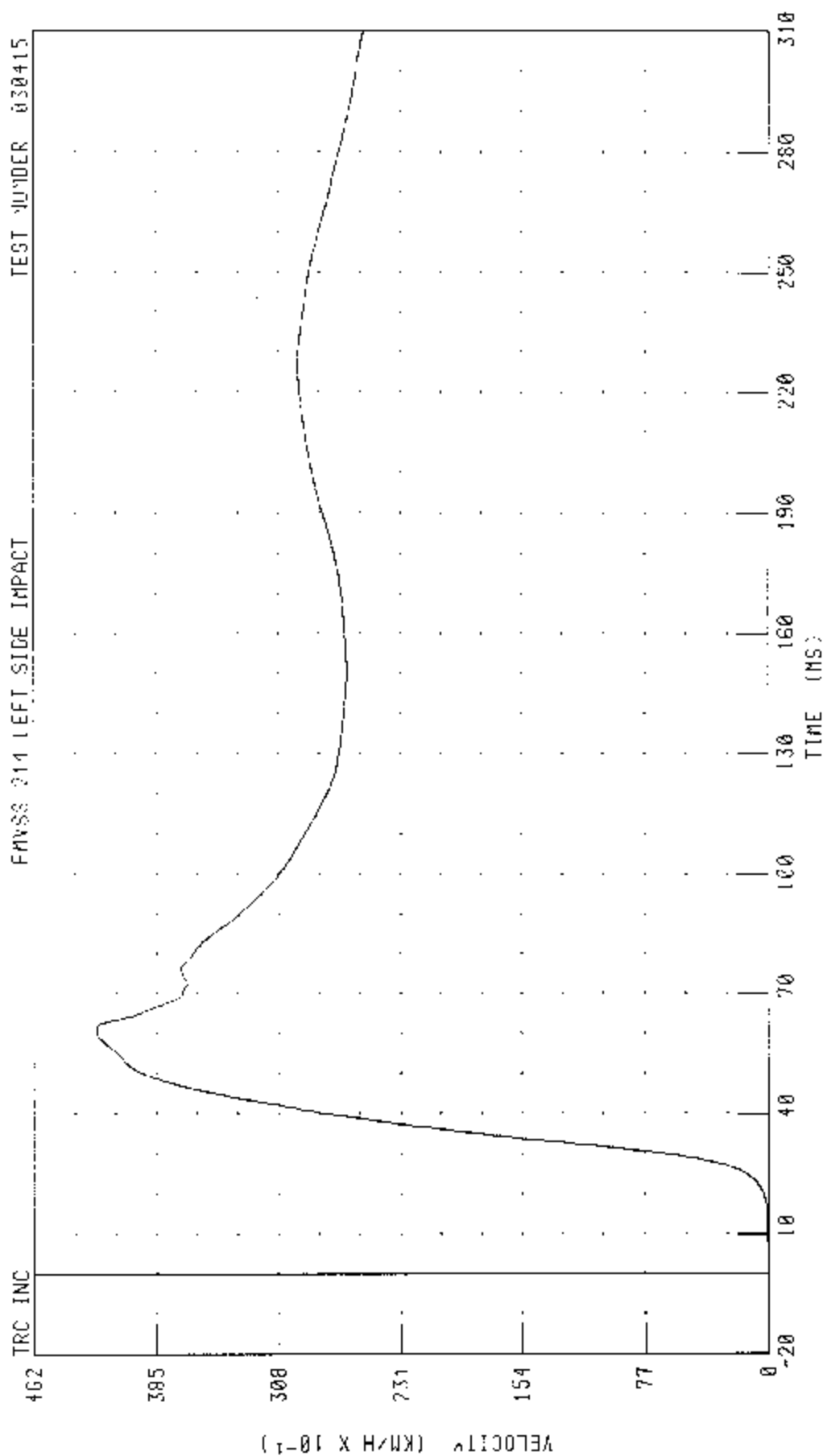
ACCELERATION (G)

TIME (MS)

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARriers) (NO FRICTION OF 2000'S SURFACE FRICTION)

DRIVER LOWER SPINE Y AXIS VELOCITY

FAVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



CHANNEL: 112YV1 FILTER CH. CLASS 180

PEAK DATA 42.30 KPH @ 60 72 MS; 0 00 KPH @ 0 00 MS

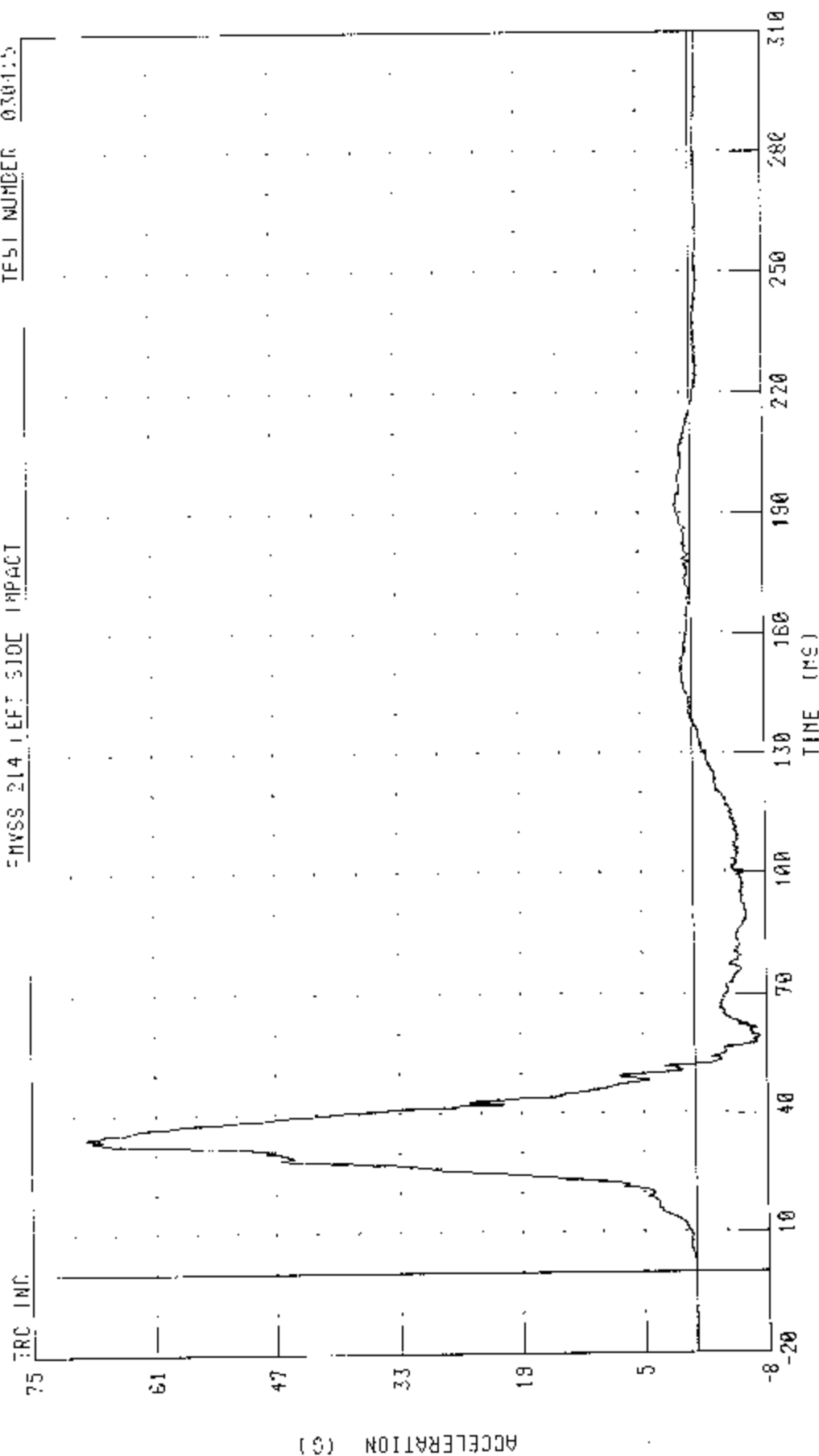
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMING BARRIER) INTO LEFT SIDE OF 2003 DURARU LEGACY

DRIVER PEVY'S Y-AXIS ACCELERATION

EMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

75 TRC INC



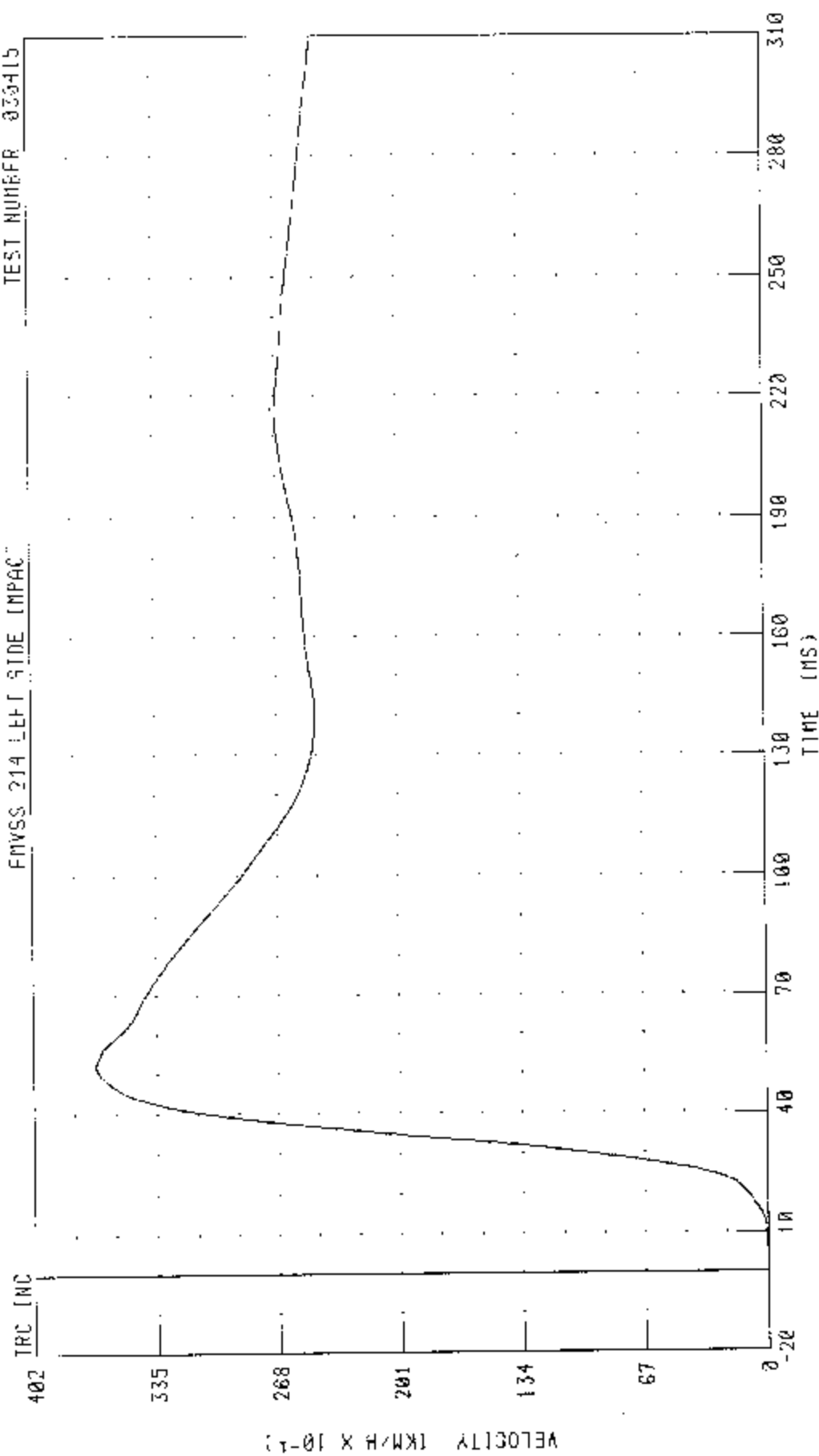
CHANNEL: PEVY01 FILTER: CH. CLASS 1000

PEAK DATA 69.51 G @ 34.16 MS, -7.53 G @ 59.12 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) AND LEFT SIDE OF 2003 SUBURB LEGACY

DRIVER PELVIS Y-AXIS VELOCITY
FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 830415



CHANNEL: PEVYV1 FILTER: CH. CLASS 180 PEAK DATA: 36.00 KM/H @ 52.24 MS, 0.00 KM/H @ 0.00 MS

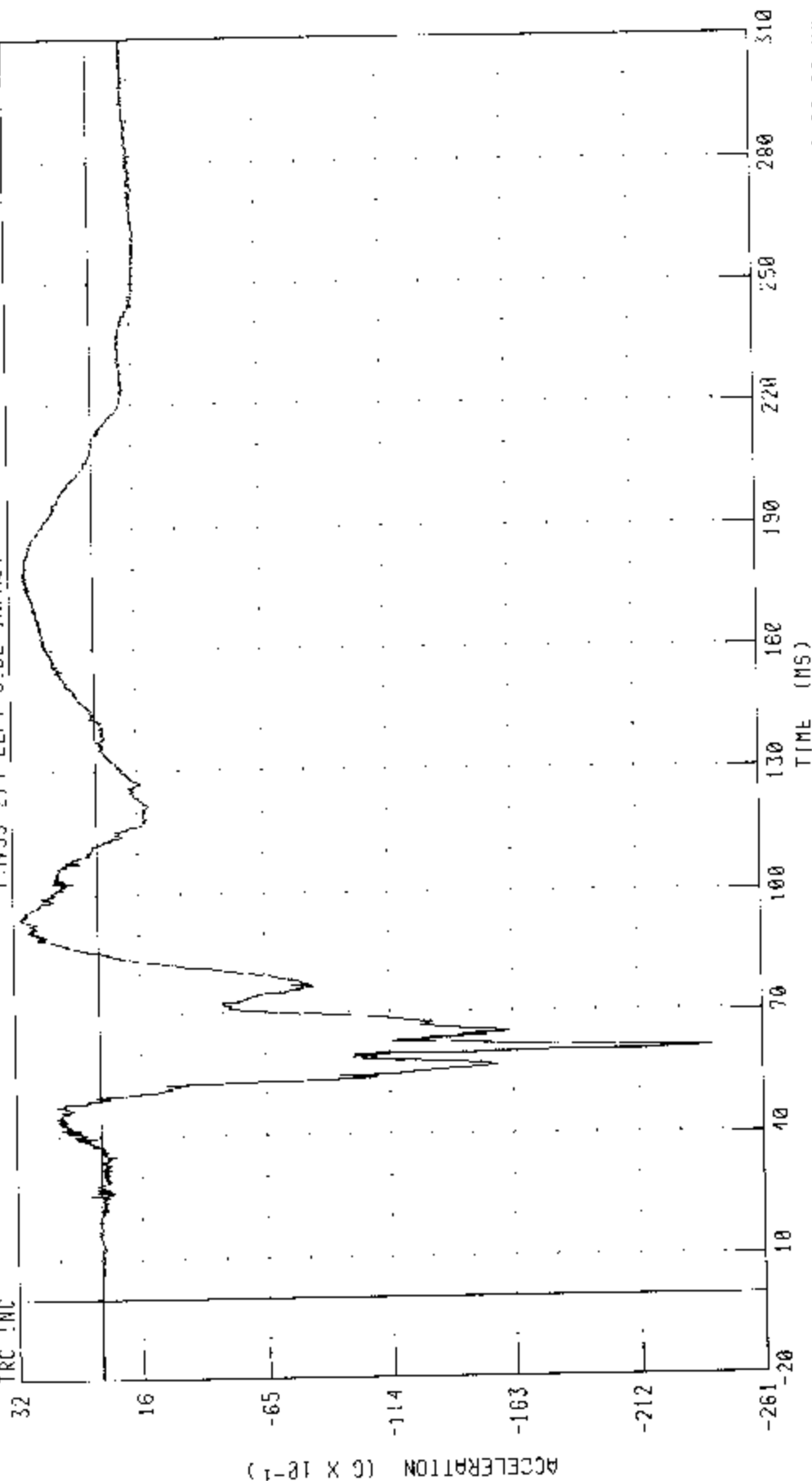
55/28 MPH 50 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 19003 SURARII LEGACY

LEFT REAR PASSENGER HEAD X AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



TIME (MS)

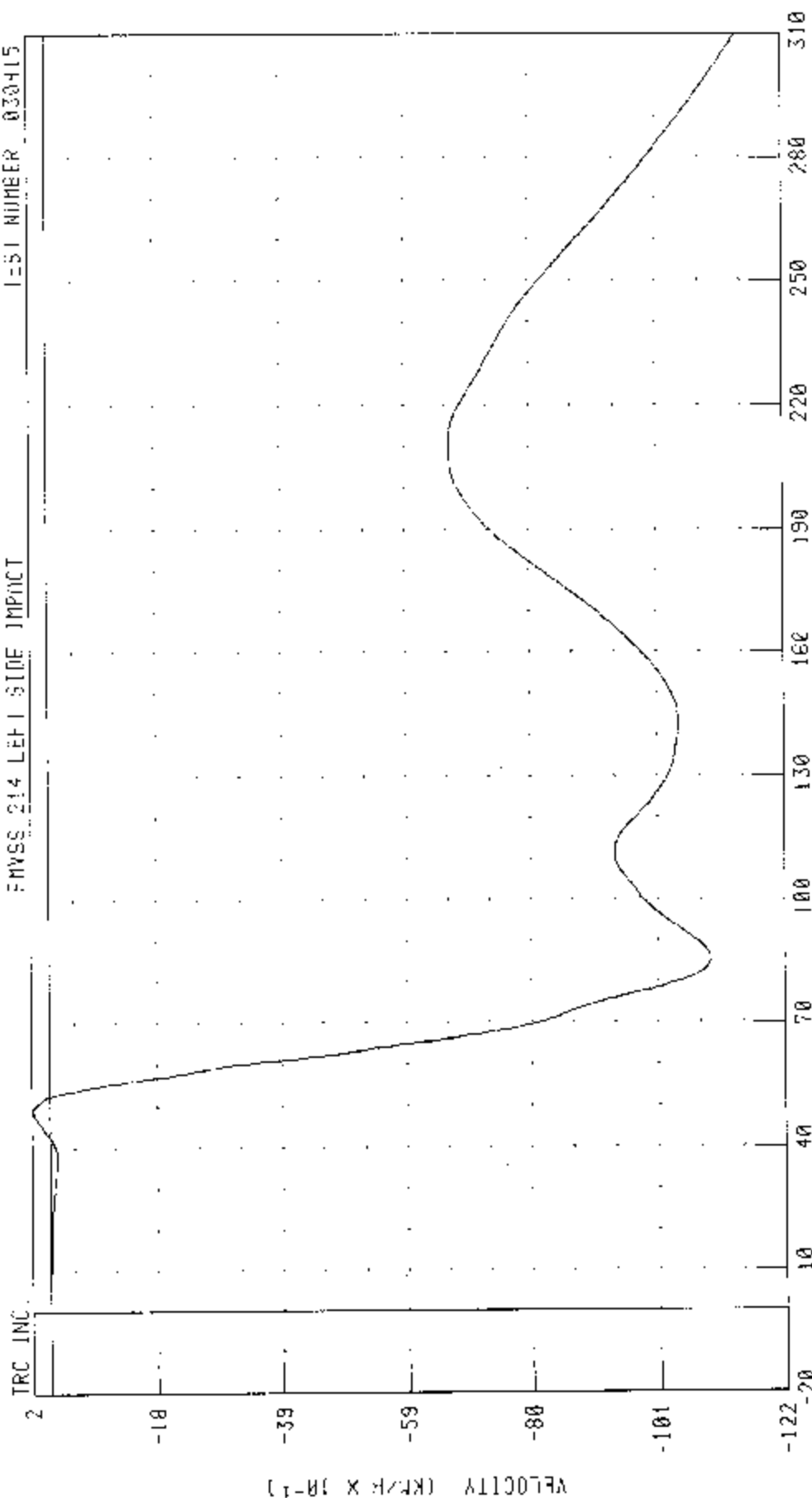
PEAK DATA 3.06 G @ 32 MS, -24.05 G @ 62 88 MS

CHANNEL: HEPX64 FILTER: CH. CLASS 1000

55/28 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER: INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT FRONT PASSENGER HIC40 X-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



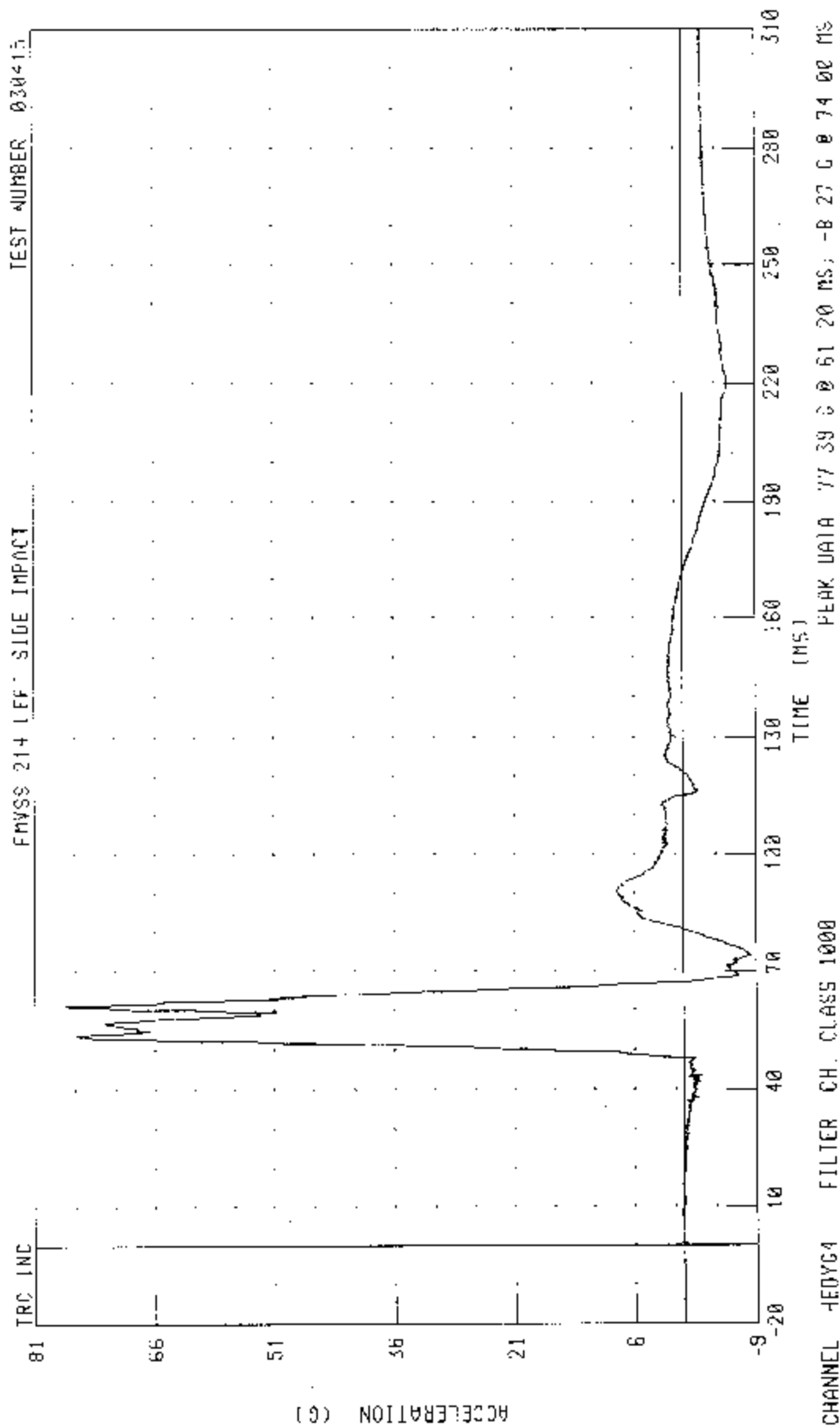
TIME (MS)

PEAK DATA: 228 KM/H @ 48 96 MS, 11.55 KM/H @ 310 00 MS

CHANNEL: HEDXV4 FILTER: CH CLASS 180

55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBURBU LEGACY

3-1 REAR PASSENGER HEAD Y-AXIS ACCELERATION



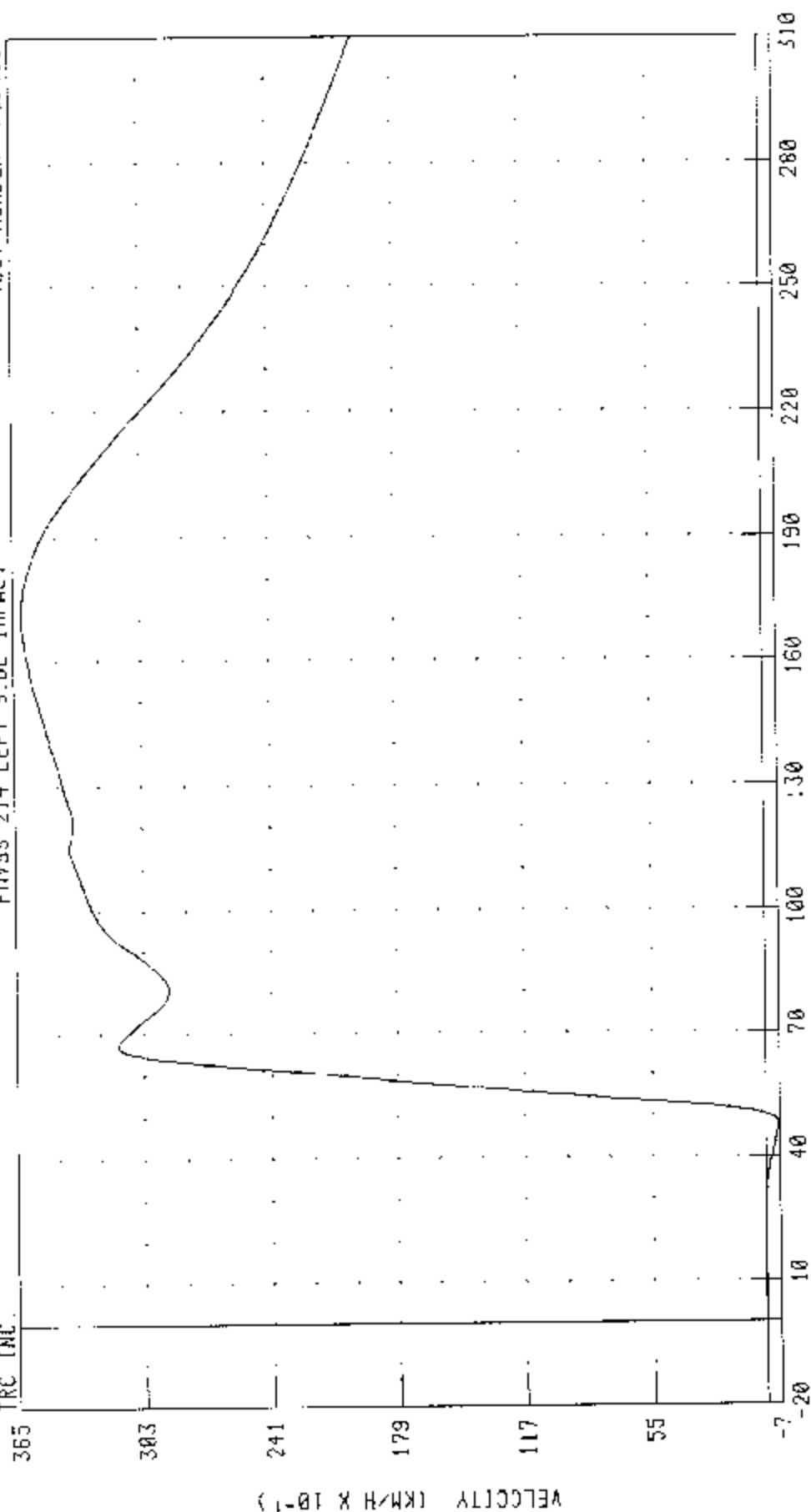
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUZUKI LEGACY

LEFT REAR PASSENGER HEAD Y AXIS VELOCITY

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



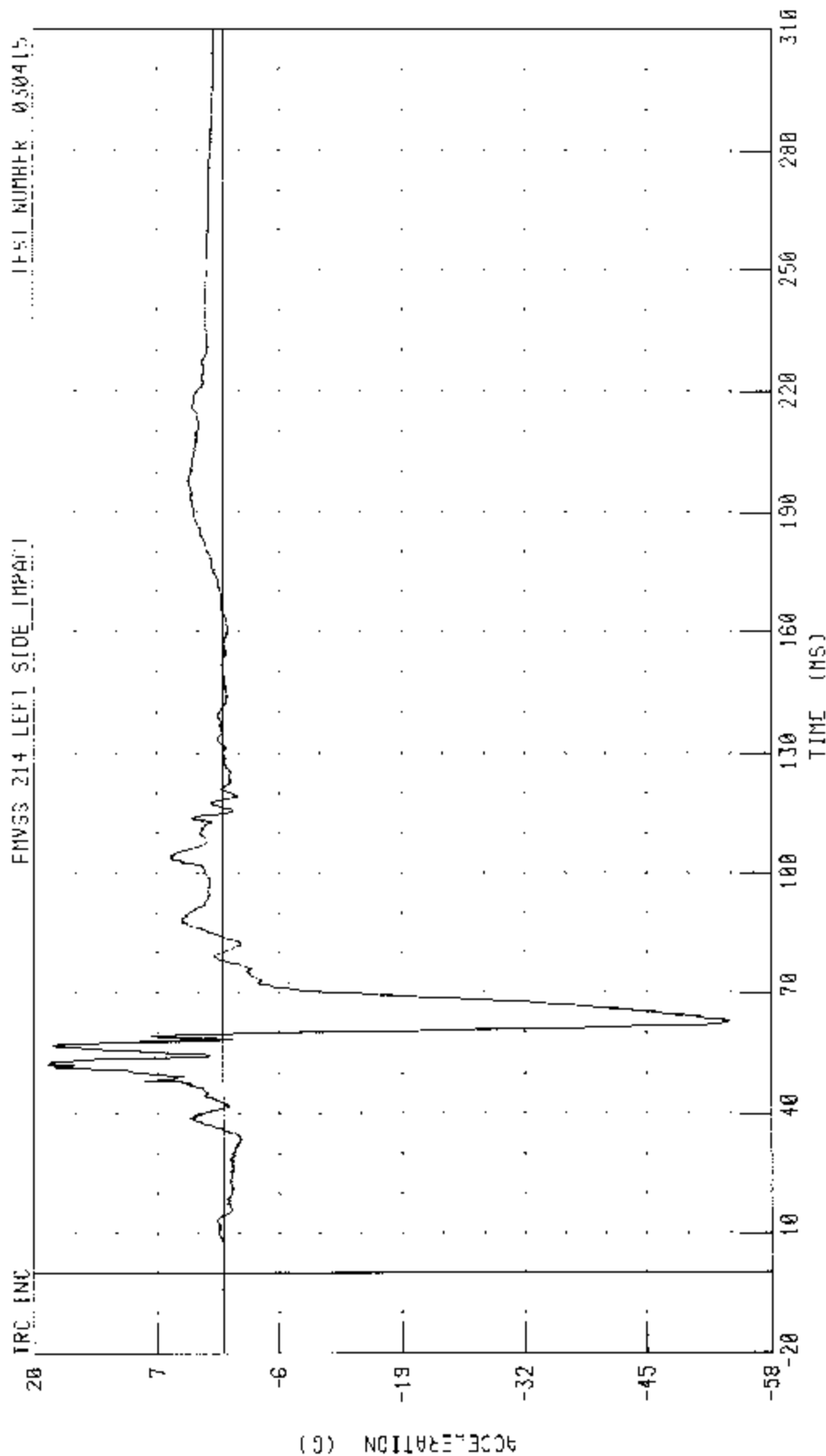
TIME (MS)

PEAK DATA 36 05 KM/H @ 171.76 MS; -0 64 KM/H @ 47 92 MS

CHANNEL: HEDYV4 FILTER: CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARI LEGACY

LEFT REAR PASSENGER HEAD Z-AXIS ACCELERATION



CHANNEL: HEADZC4 FILTER: CH. CLASS 1000

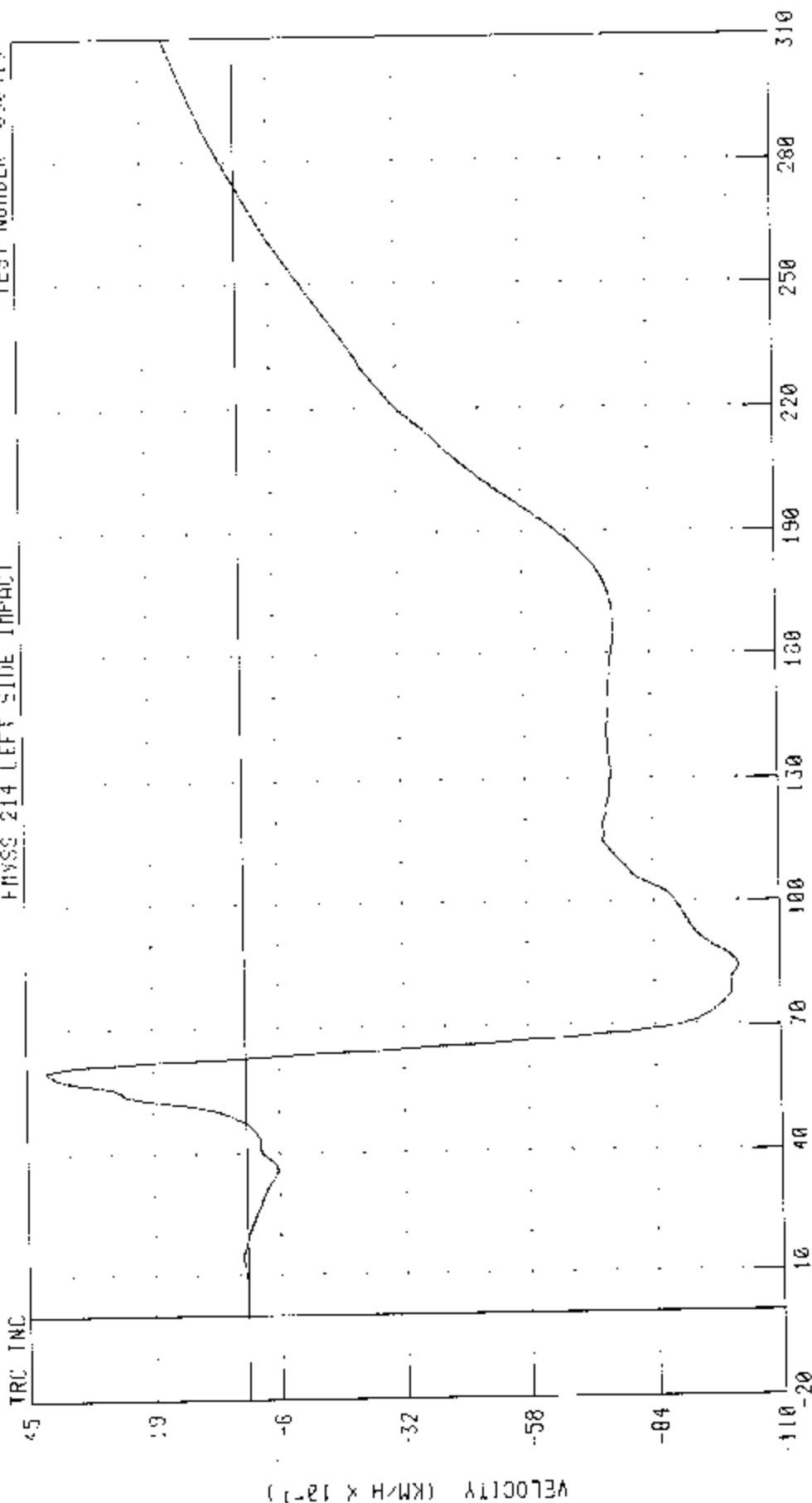
PEAK DATA: 10 60 G @ 52 40 MS, -53 46 G @ 62 96 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER HEAD Z-AXIS VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



PEAK DATA: 10 KM/H @ 59.68 MS, -10.22 KM/H @ 84.00 MS

CHANNEL: HEDZY4 FILTER: CH. CLASS 180

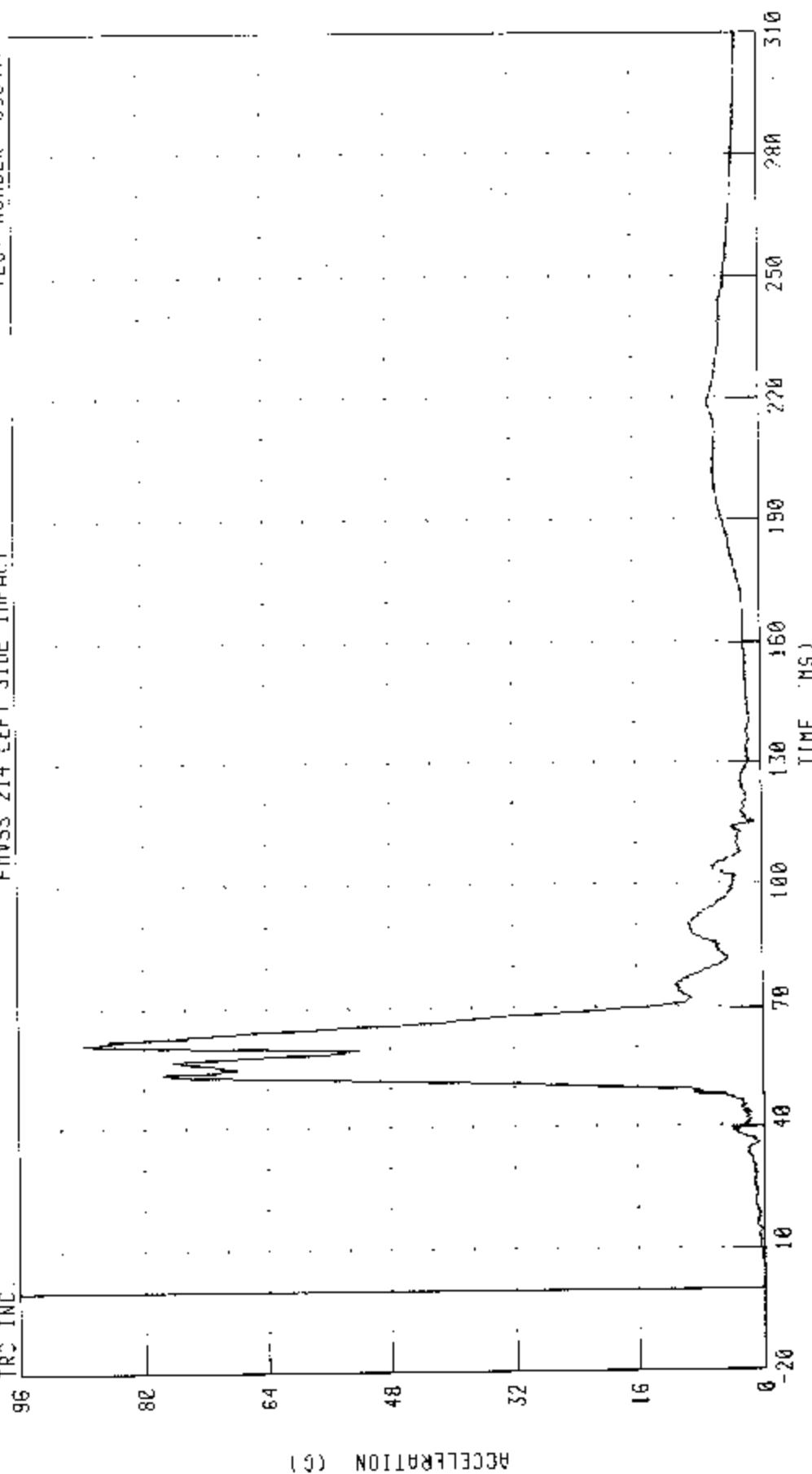
55/28 MPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2001 SUBARU LEGACY

LEFT REAR PASSENGER HEAD RESULTANT ACCELERATION

TEST NUMBER W30415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



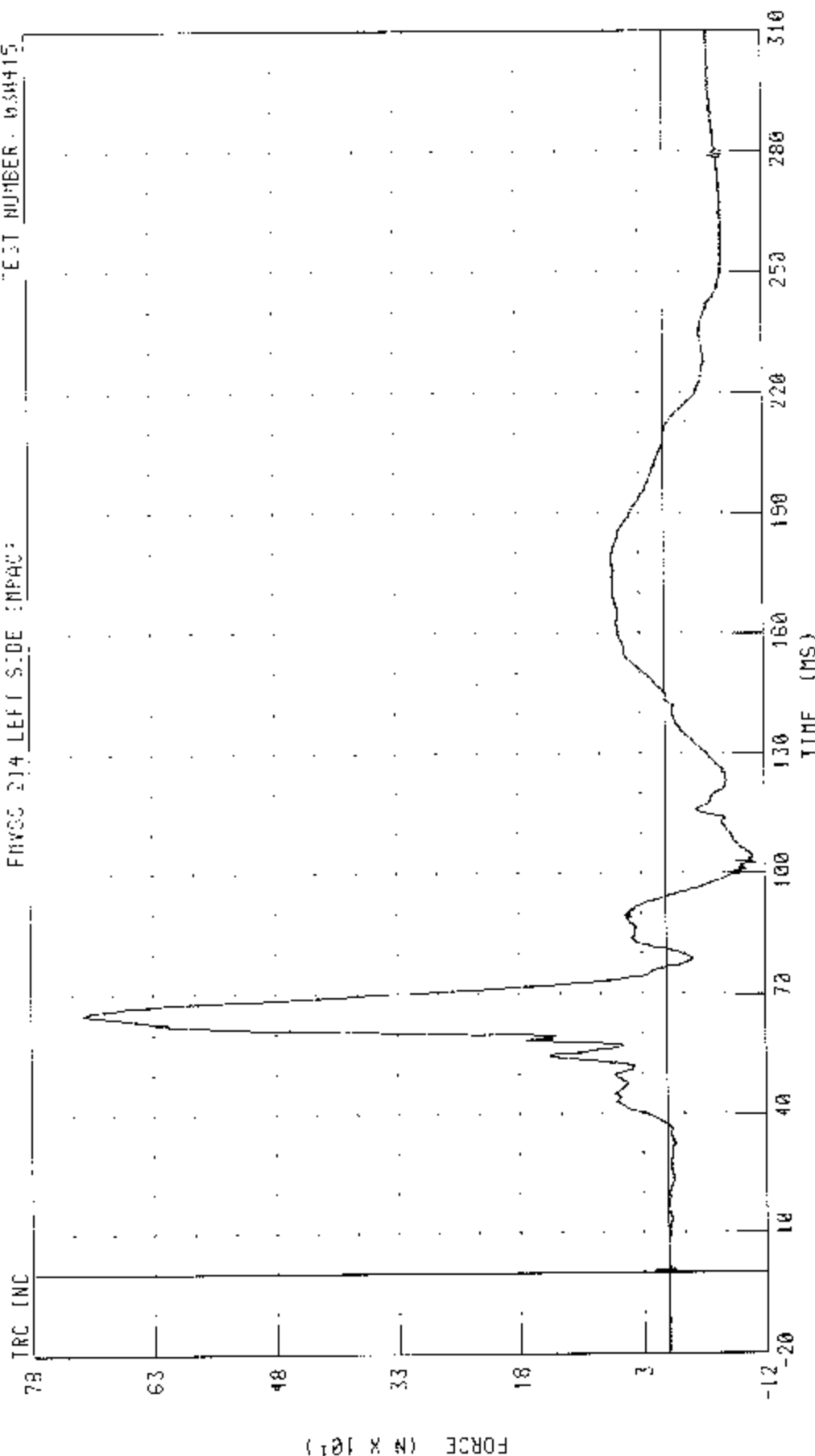
CHANNEL: HED004 FILTER: CH. CLASS 1000

PEAK DATA: 87.80 G @ 61.20 MS; 0.01 G @ -19.12 MS

55/23 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SLEPBU LEGACY

LEFT REAR PASSENGER NECK X-AXIS SHEAR FORCE

FMVSS 214 LEFT SIDE IMPACT EST NUMBER: 030415



CHANNEL: NEKXF4 FILTER: CH. CLASS 1000

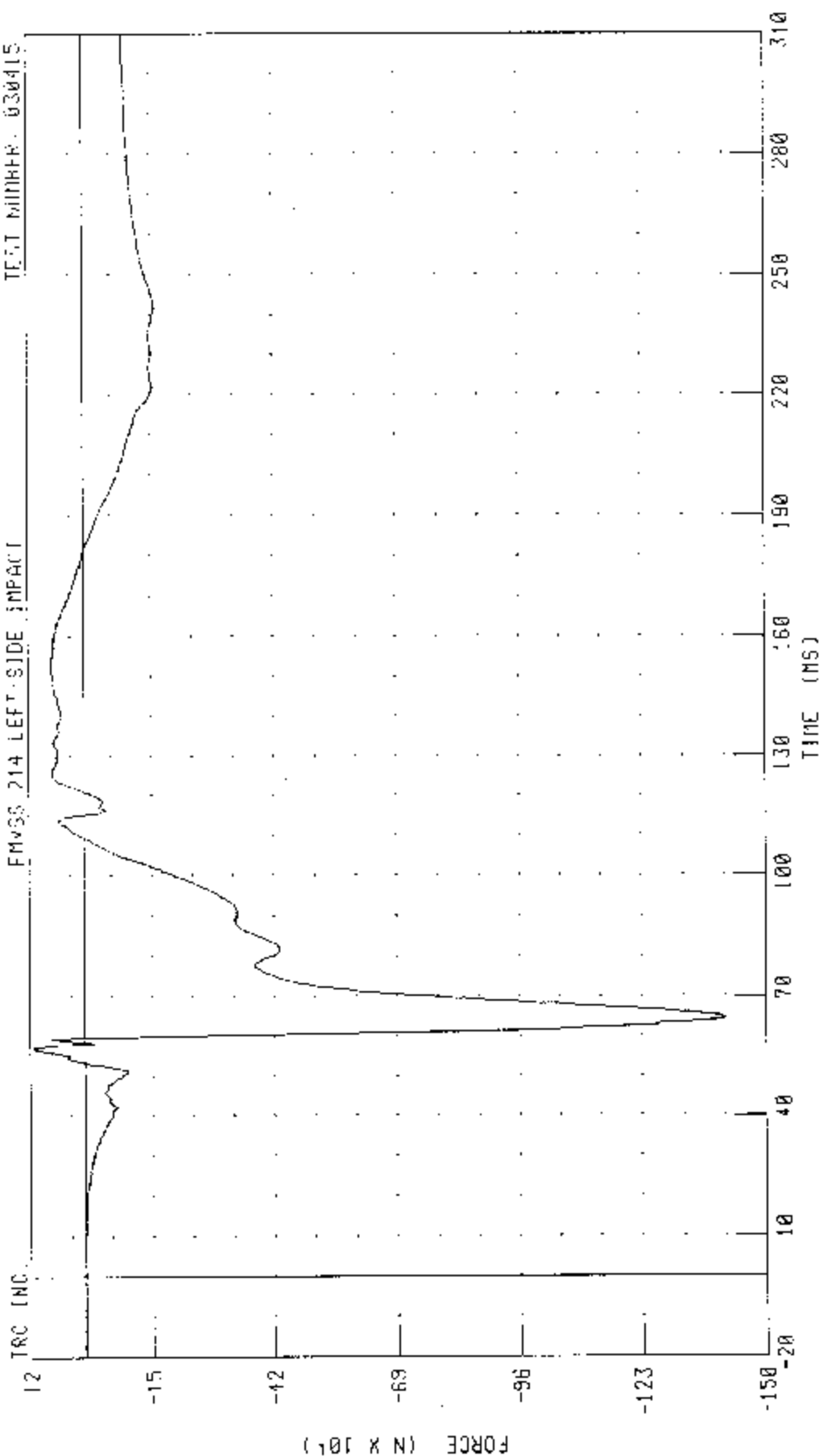
PEAK DATA: 716.24 N @ 65.28 MS, -109.22 N @ 102.72 MS

55/23 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU FORECAST

LEFT REAR PASSENGER NECK Y-AXIS SHEAR FORCE

FMVSS 214 LEFT-SIDE IMPACT

TEST NUMBER: 030415



PEAK DATA 111.66 N @ 57.23 MS, -1412.9: N @ 64.80 MS

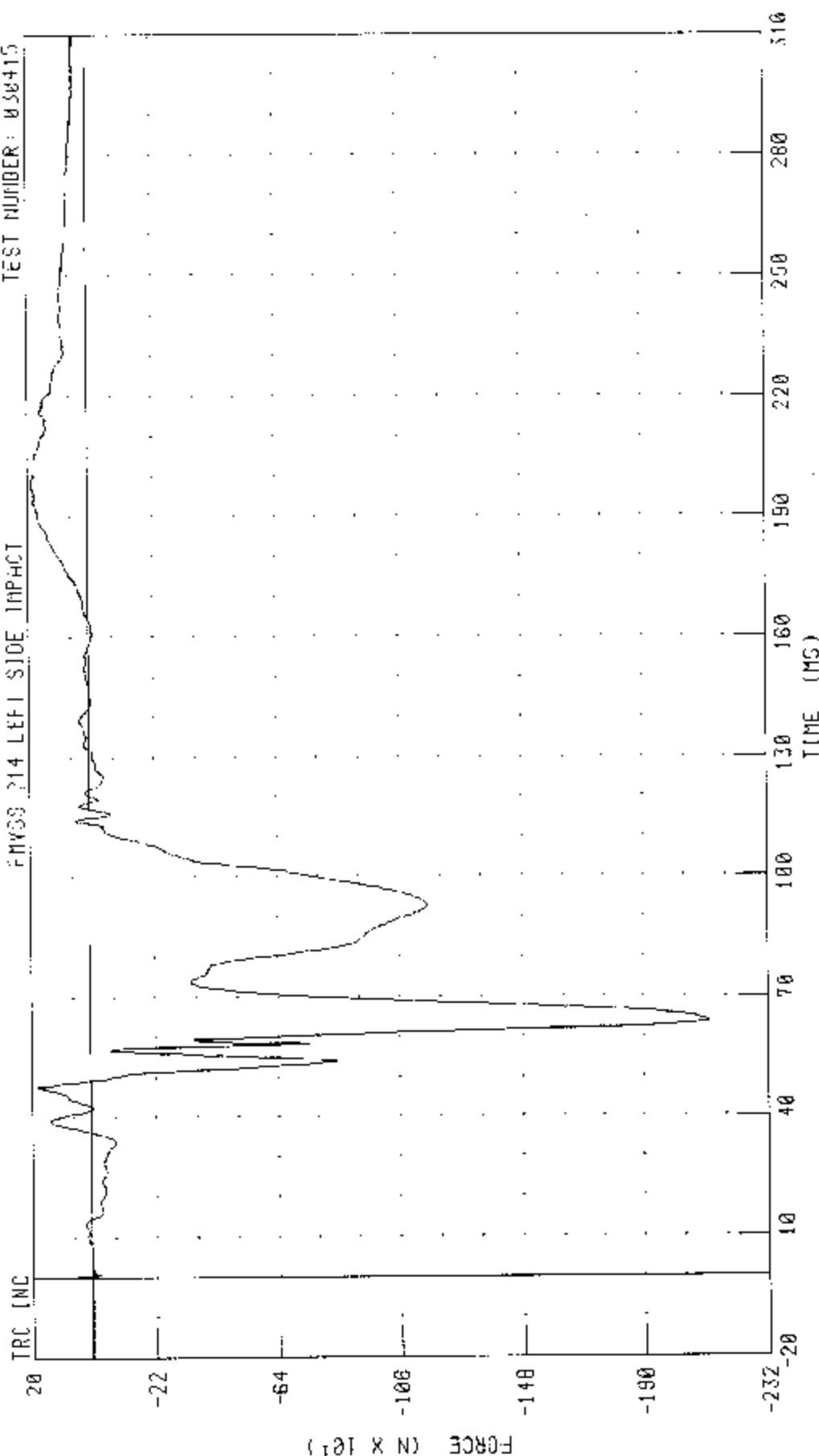
CHANNEL: NEKYF4 FILTER: CH. CLASS 1000

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER NECK Z-AXIS AXIAL FORCE

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

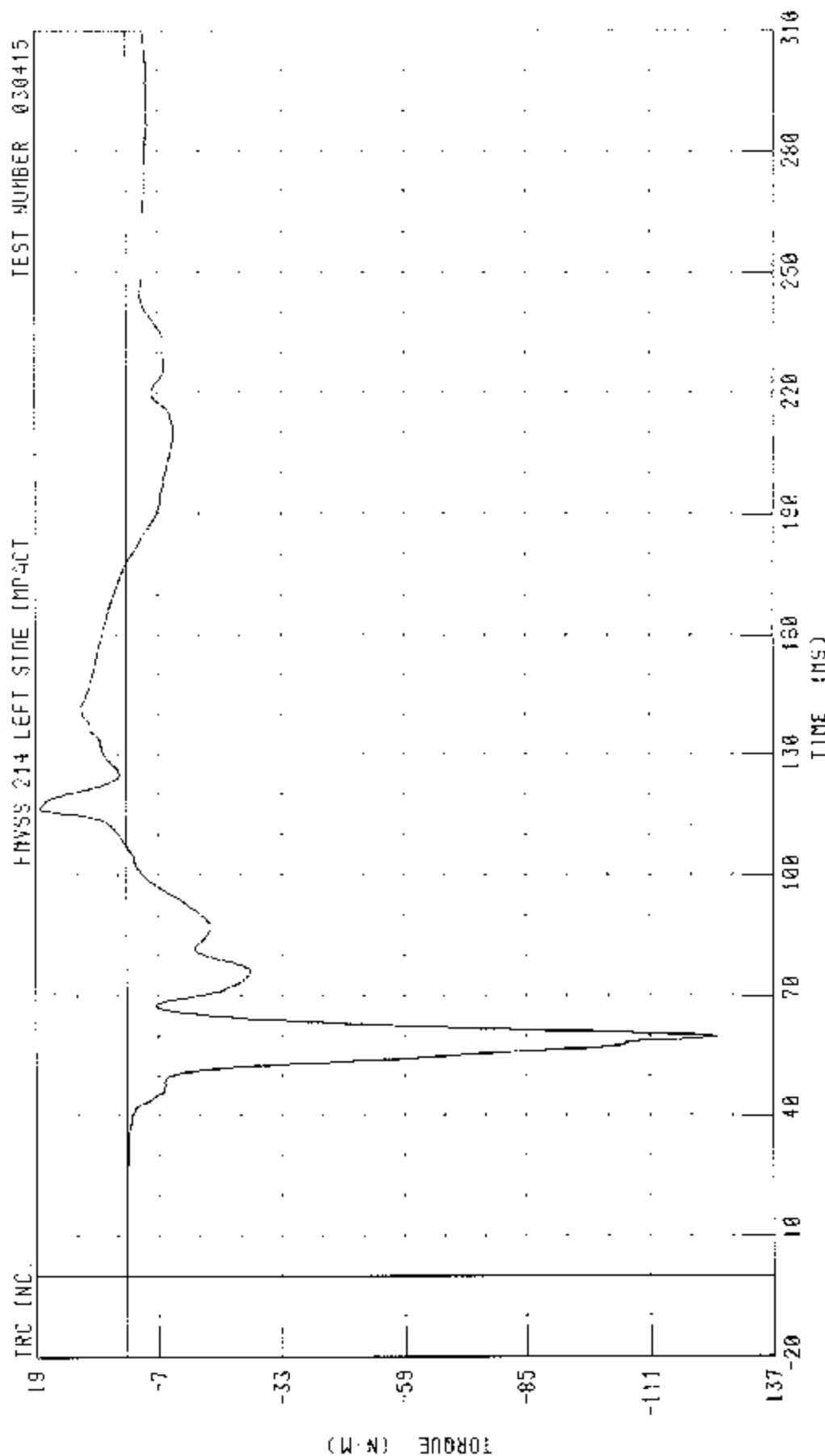


TIME (MS)

PEAK DATA: 188 92 N @ 138 24 MS, 2126 29 N @ 64 00 MS

CHANNEL: NEKZF4 FILTER: CH CLASS 1000

55/28 KPH 30 DEGREE SLIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
LEFT REAR PASSENGER NECK JOINT ABOUT X-AXIS



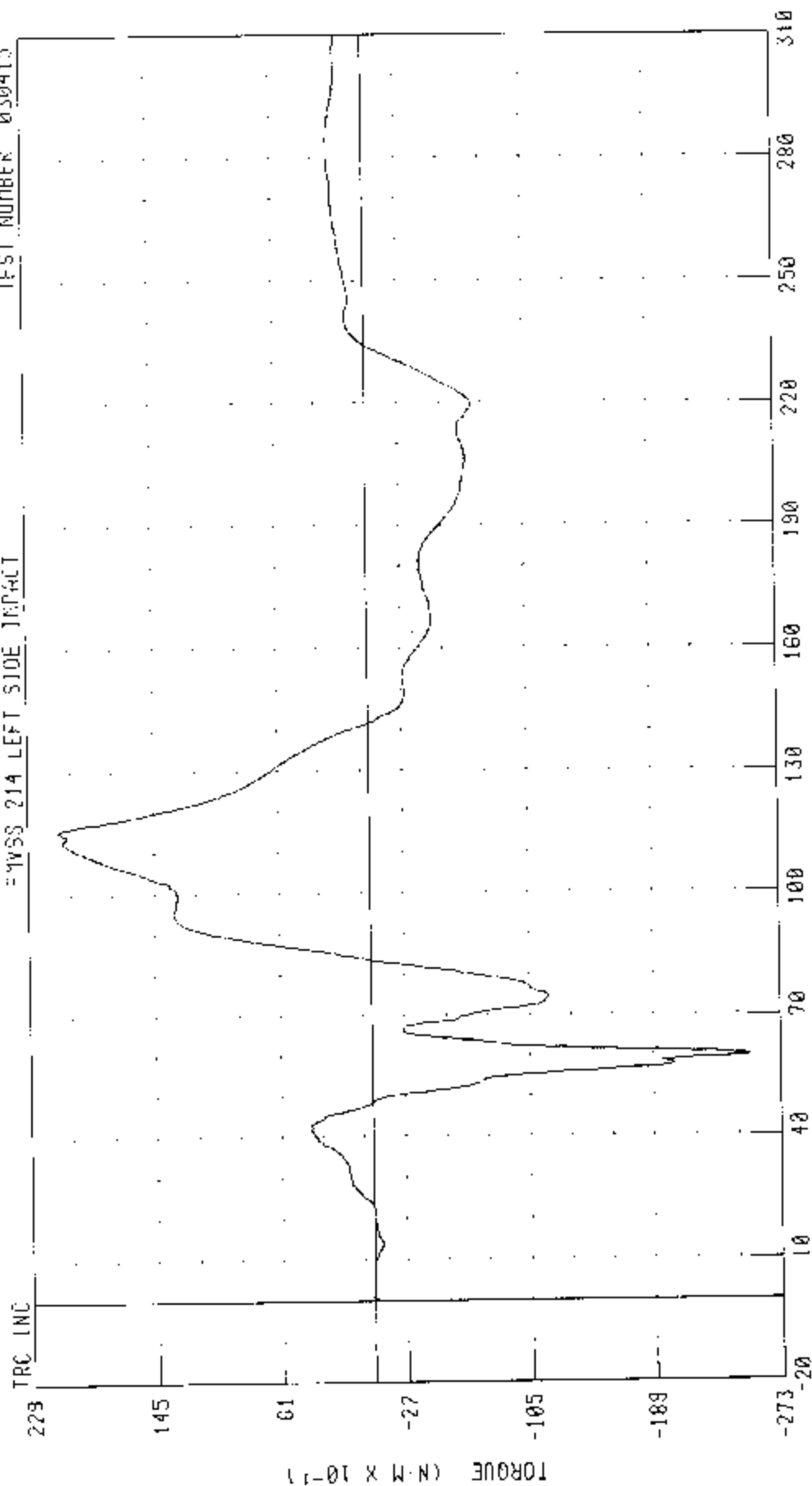
CHANNEL: NEKX114 FILTER: CH CLASS 600 PEAK DATA: 17 98 N F B 116 56 MS; -125 23 N 1 0 59 92 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2004 SUBARU LEGACY

LEFT REAR PASSENGER NECK MOMENT ABOUT Y AXIS

TEST NUMBER 030415

WSS 214 LEFT SIDE IMPACT



PEAK DATA 20.93 N M @ 115.36 MS, -25.33 N-M @ 59.92 MS

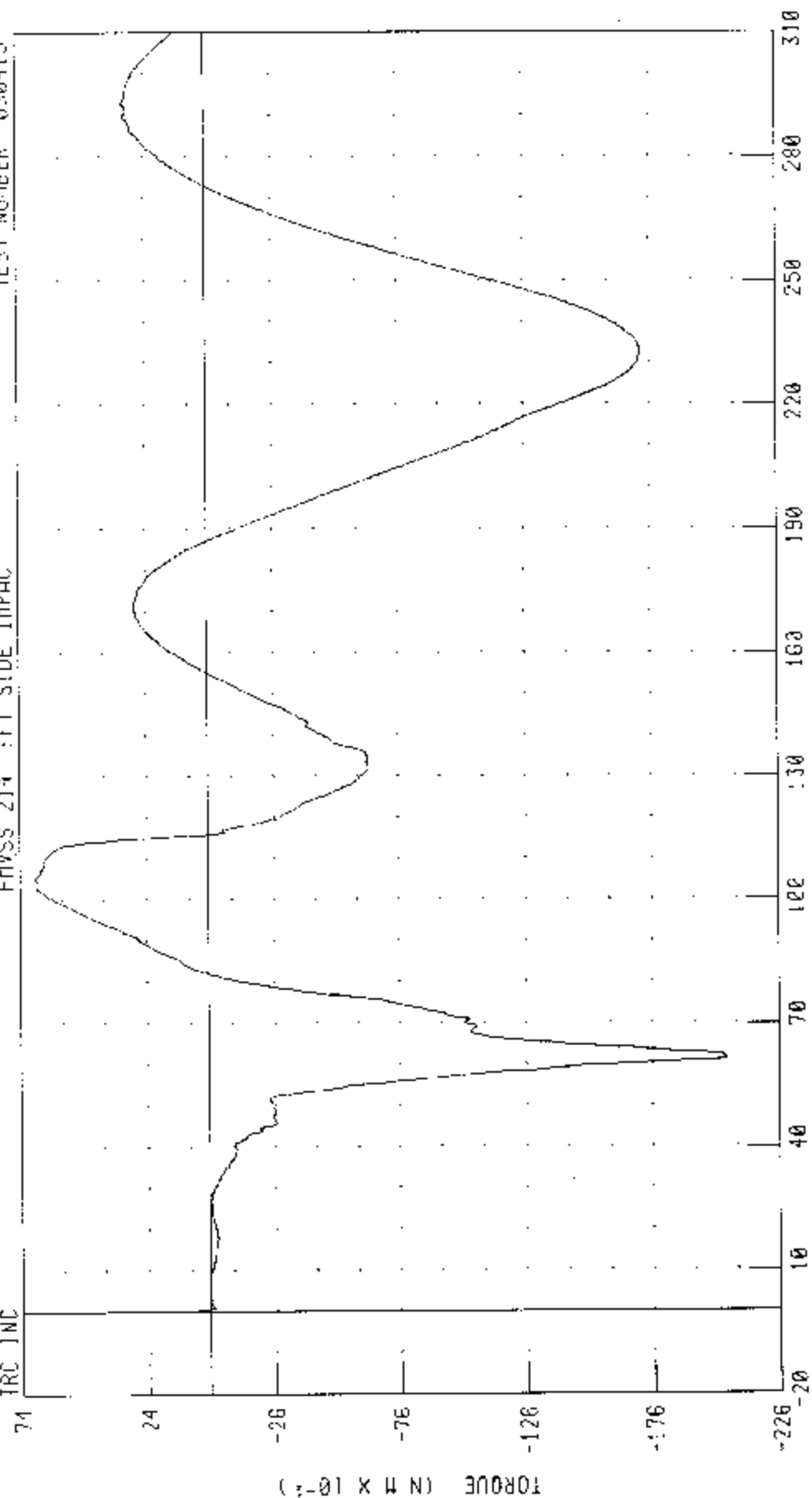
CHANNEL: NEKYM4 FILTER: CH. CLASS 600

55/20 KPH 30 DEGREE SIDE IMPACT (MOVING OFFROADABLE BARRIER) INTO LEFT SIDE OF 2003 SCHARU LEGACY
LEFT REAR PASSENGER NIJOK MOMENT ABOUT Z AXIS

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC

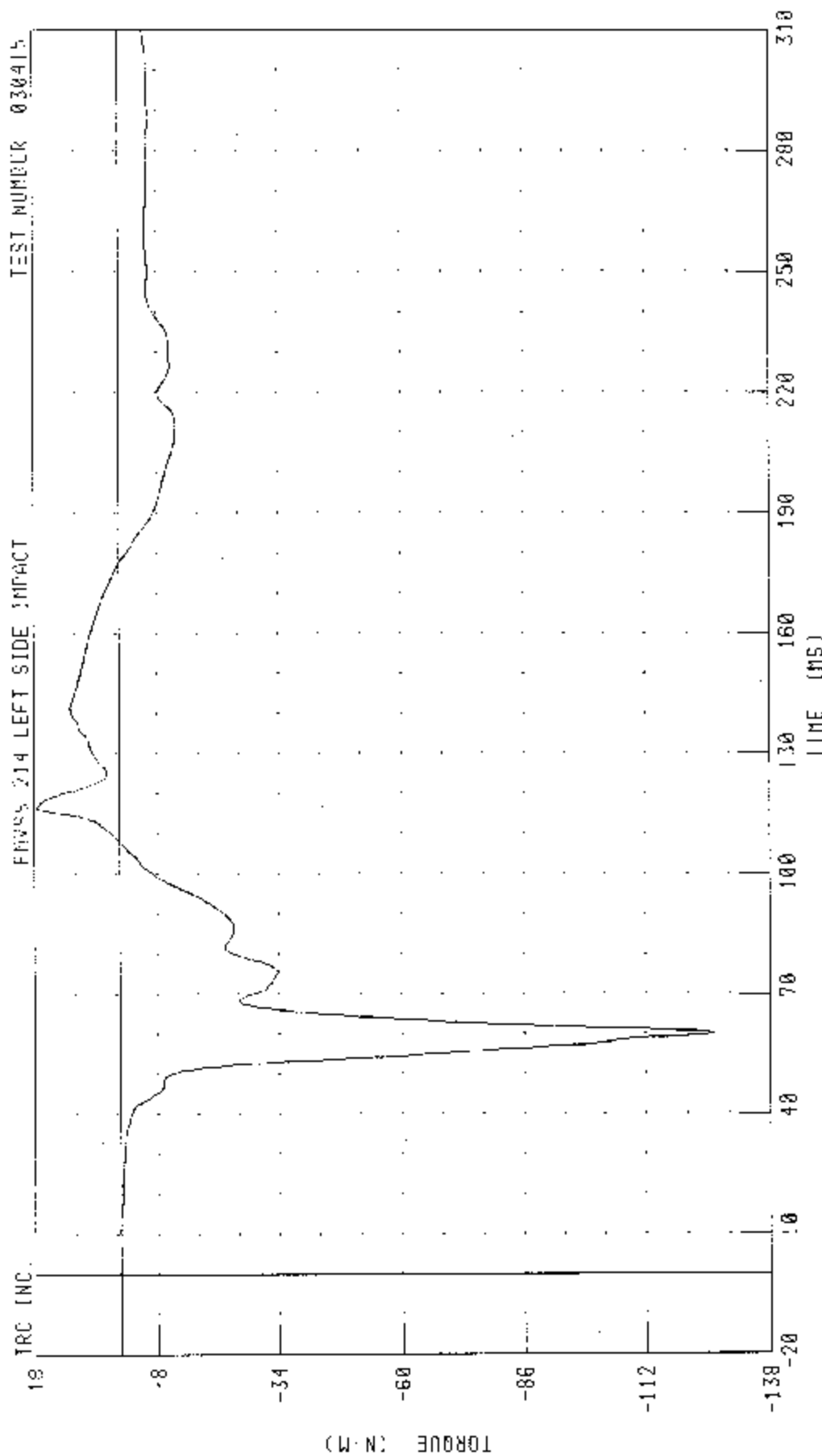


TIME (MS)

PEAK DATA: 6 88 N M 6 105 12 MS, -20 52 N M 6 61 44 MS

CHANNEL NEKZM4 FILTER: CH. CLASS 600

55/28 KFH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER NECK OCCIPITAL CONDYLE MOMENT ABOUT X AXIS



PEAK DATA 17 20 N 11 0 116 64 MS, -126.22 N 0 60 16 MS

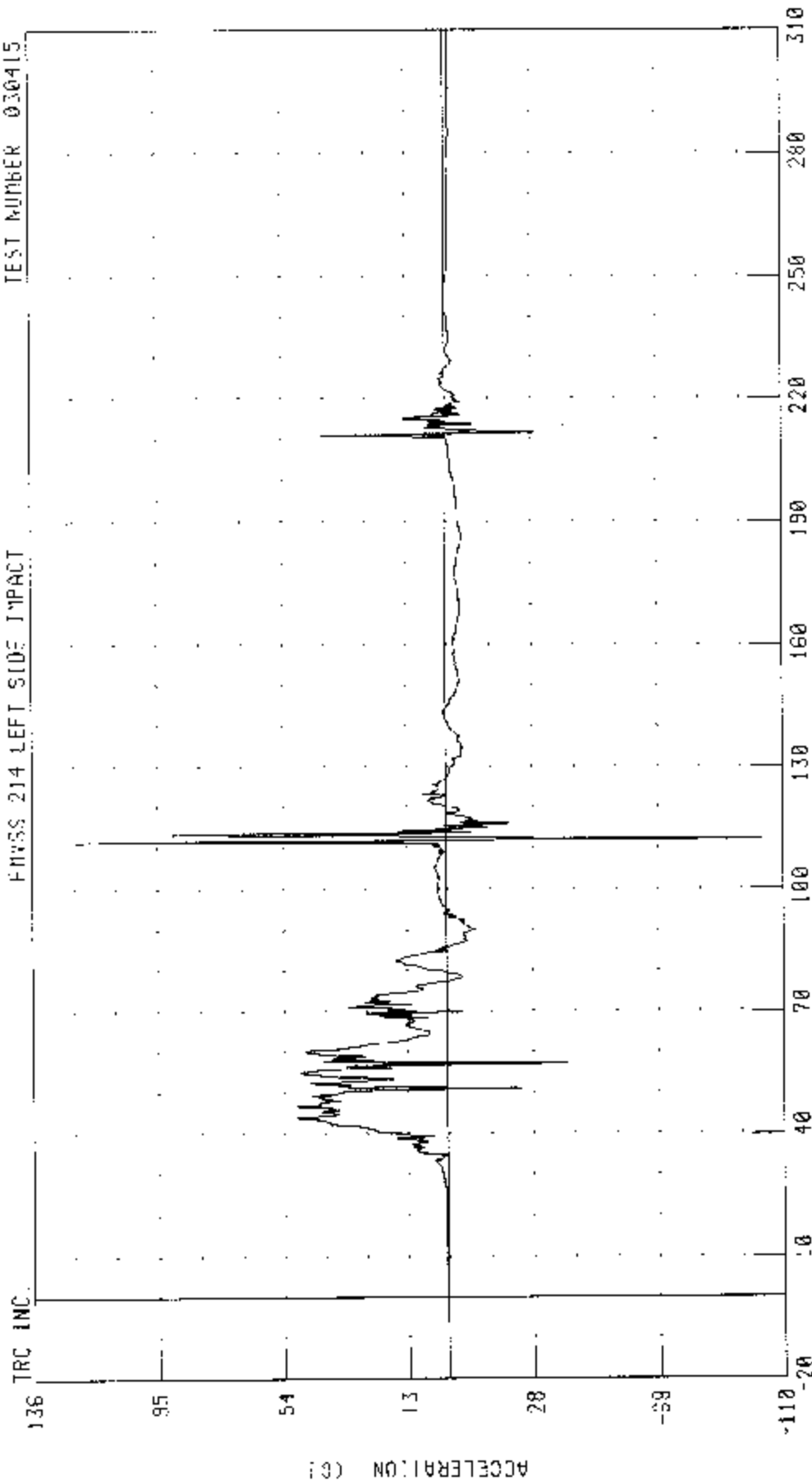
CHANNEL NK0XM4 FILTER: CH. CLASS 600

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2000 SUBCOMPACT

LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



TIME (MS)

PEAK DATA: 121.99 G @ 111.60 MS; -103.19 G @ 112.08 MS

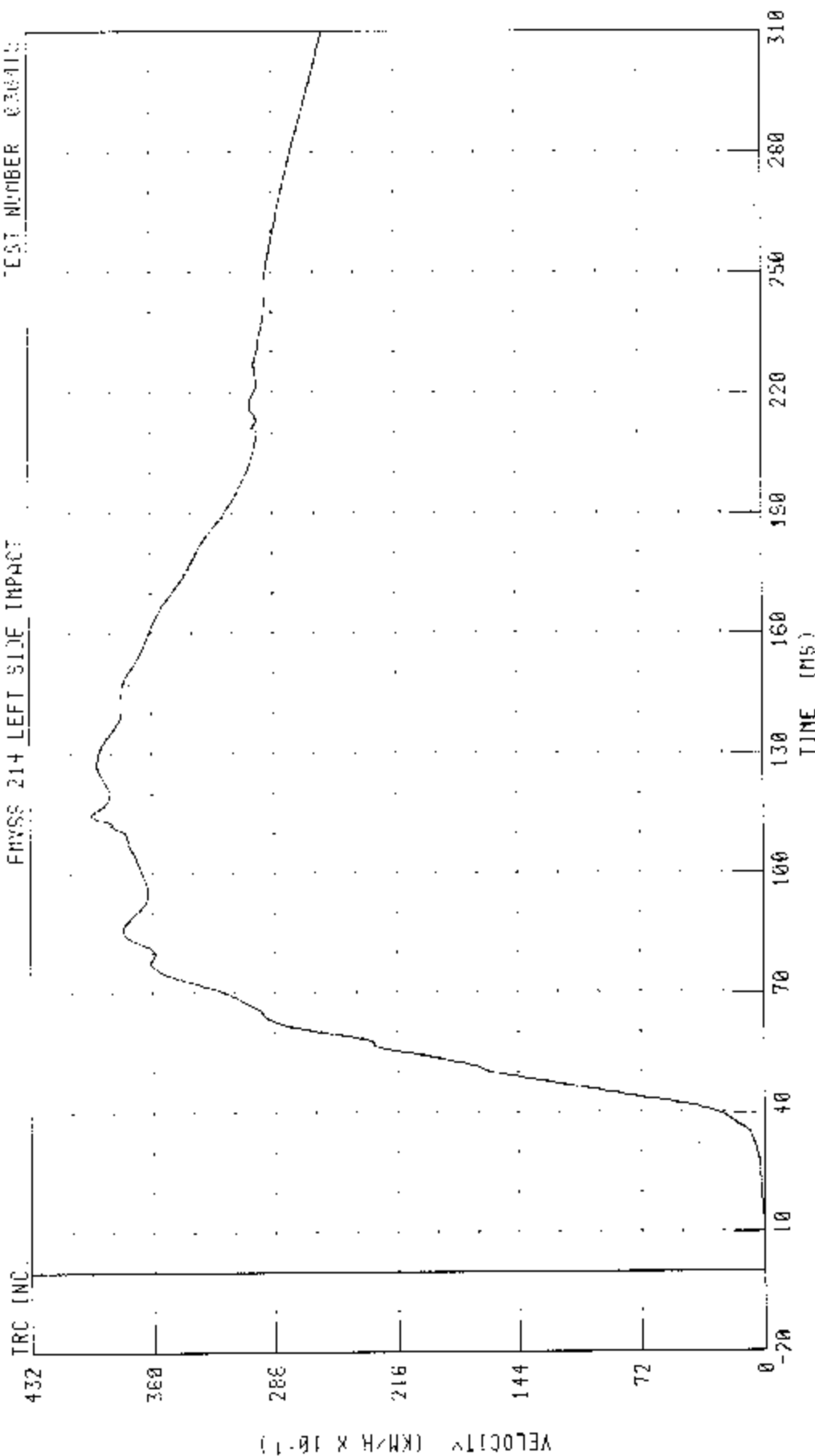
CHANNEL LURYG4 FILTER CH. CLASS 1200

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER UPPER RIG. Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



PEAK DATA: 39.58 KM/H @ 114.72 MS; 0.00 KM/H @ 0.00 MS

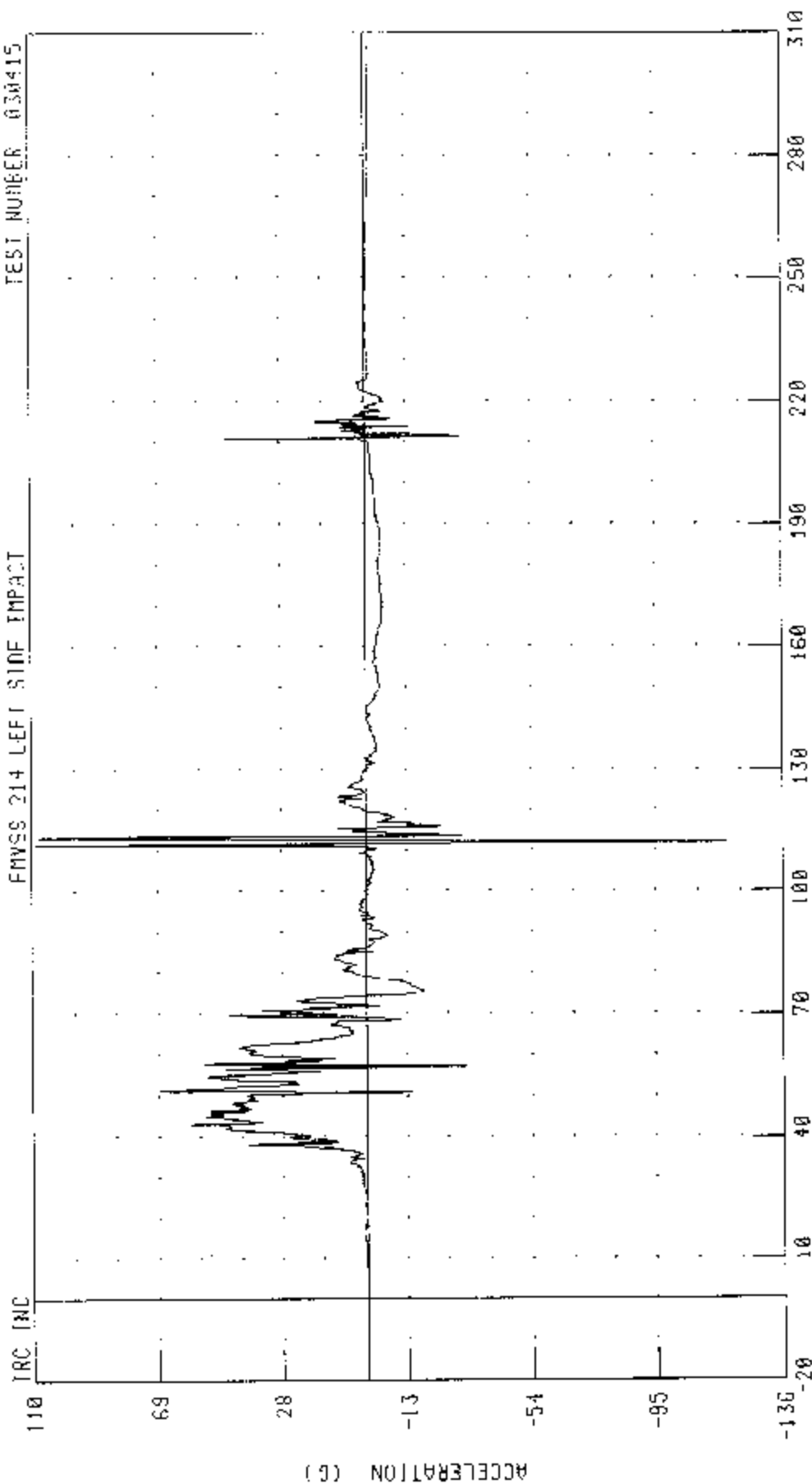
CHANNEL LCRV4 FILTER CH. CLASS 180

55228 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE CARRIER) INTO LEFT SIDE OF 2003 SUBURU LEGACY

LE-1 REAR PASSENGER LOWER RIB X AXIS ACCELERATION

TEST NUMBER 030415

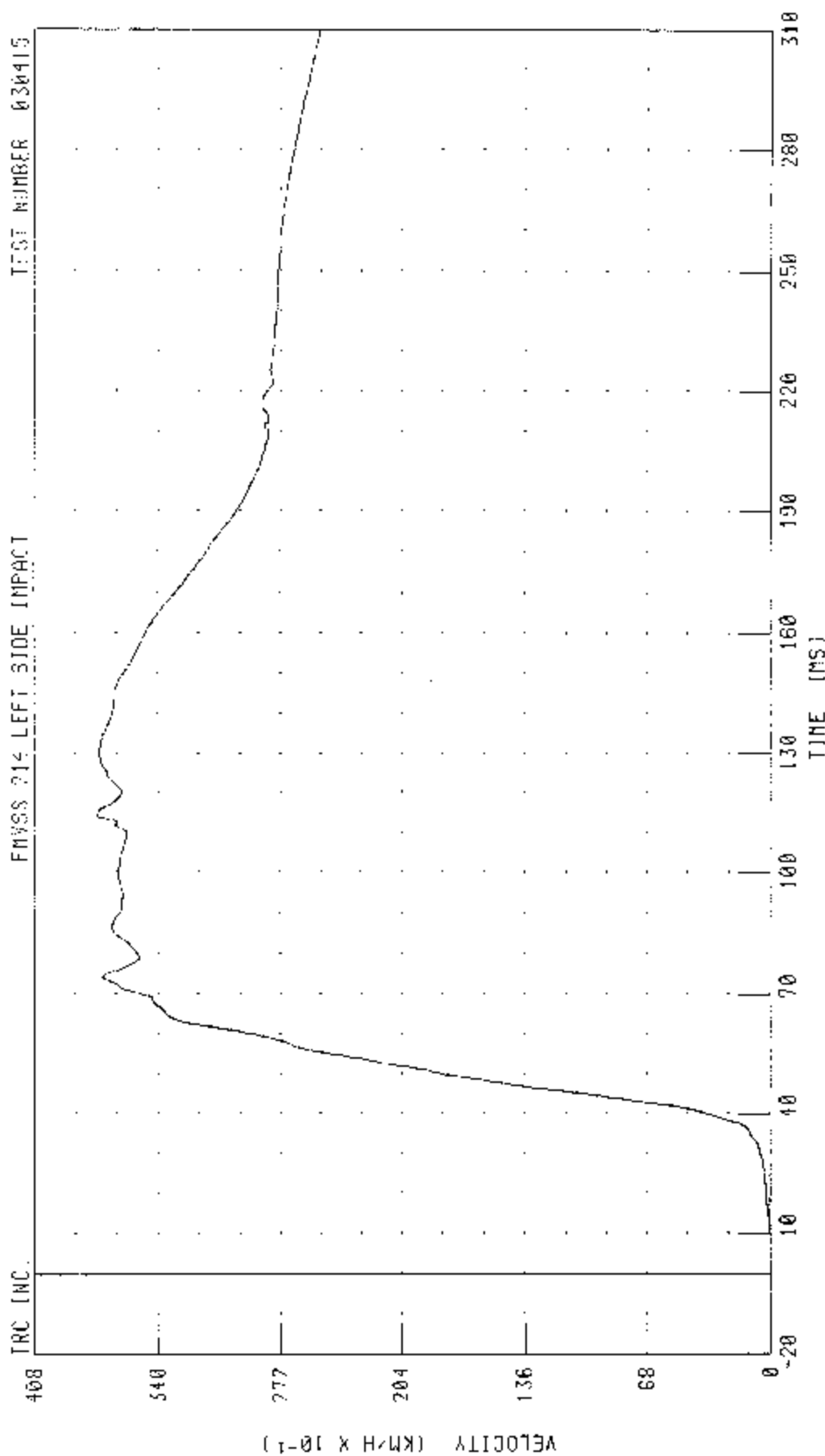
FMVSS 214 LEFT SIDE IMPACT



CHANNEL LLRYG4 FILTER: CH CLASS 1000

PEAK DATA: 108.52 G @ 111.52 MS, -118.08 G @ 112.08 MS

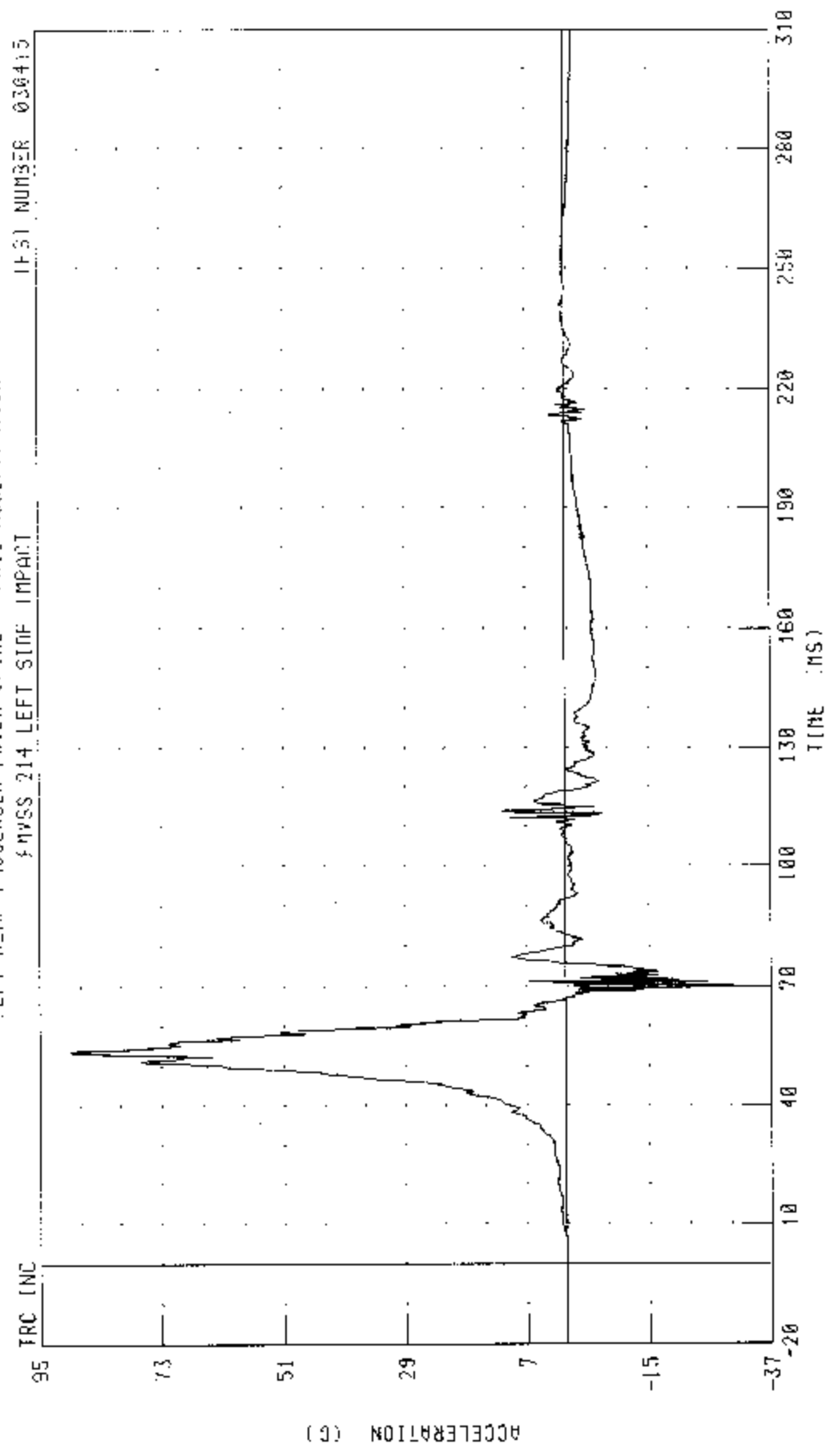
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER LOWER RIB Y AXIS VELOCITY



PEAK DATA 37 31 KM/H @ 114 24 MS, 0 00 KM/H @ 3 56 MS

CHANNEL LLRYV4 FILTER CH CLASS 100

55/20 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF TRUCK SUBARU LEGALY
 LEFT REAR PASSENGER LOWER SPINE 4-AXIS ACCELERATION

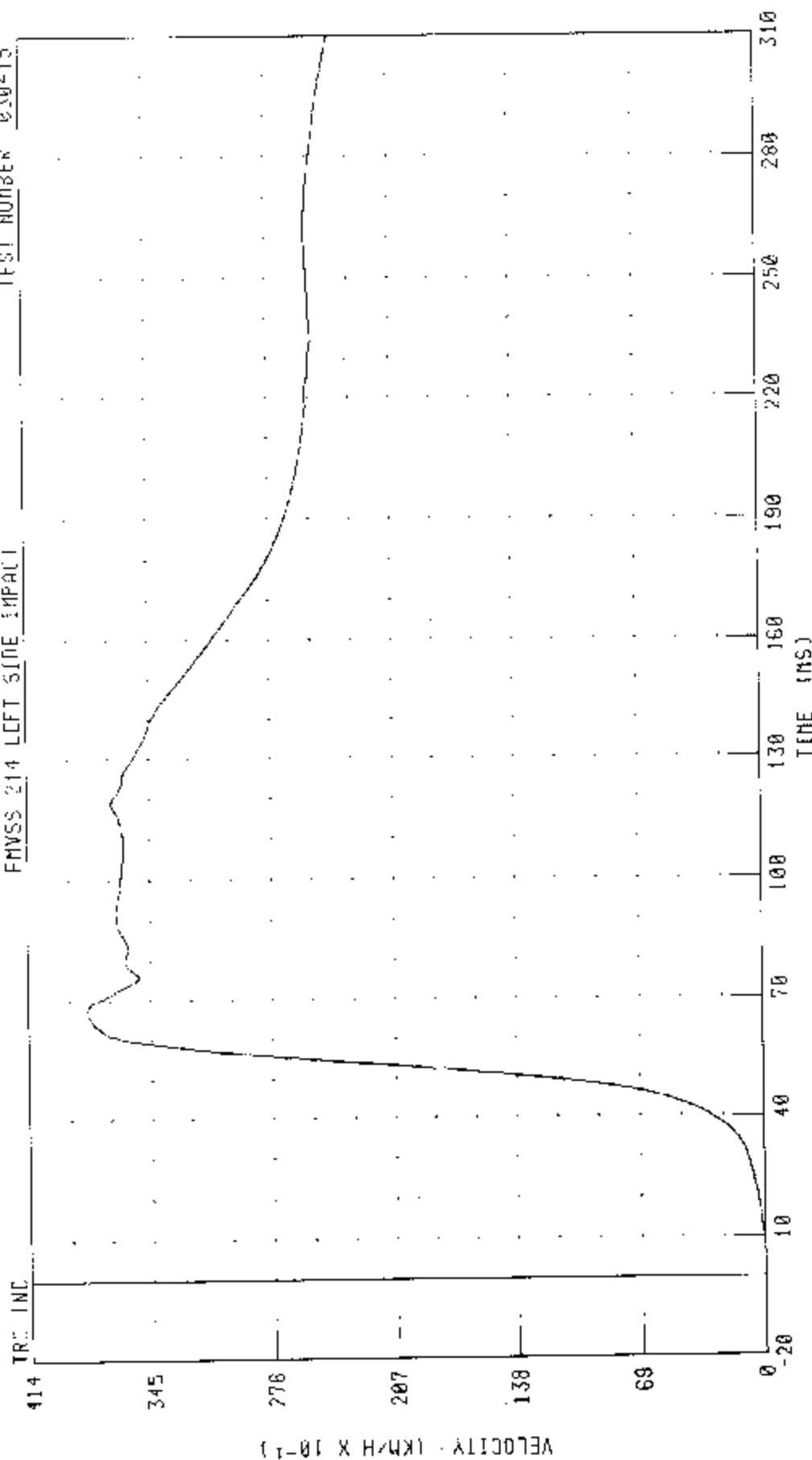


CHANNEL: T12YC4 FILTER: CH CLASS 1000 PEAK DATA 89 55 0 0 54 00 MS, -34 00 G @ 70.24 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER LOWER SPINE Y-AXIS VELOCITY

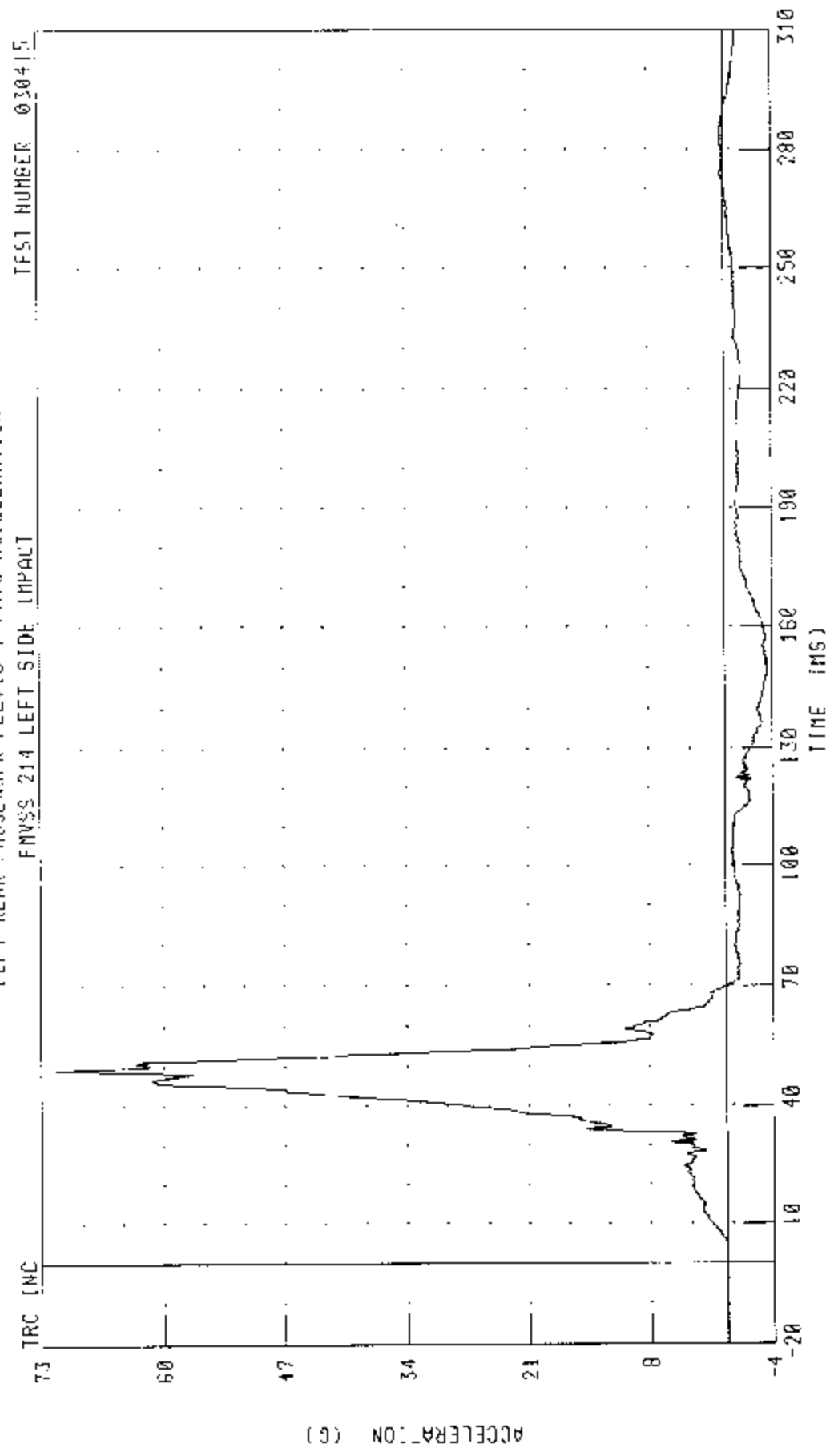
FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



PEAK DATA 38.11 KM/H @ 67.20 MS. 0.00 KM/H @ 0.00 MS

CHANNEL: T12V04 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER - INTO LEFT SIDE OF 2000X SUBARU LEGACY
 LEFT REAR PASSENGER PELVIS Y-AXIS ACCELERATION



FMVSS 214 LEFT SIDE IMPACT

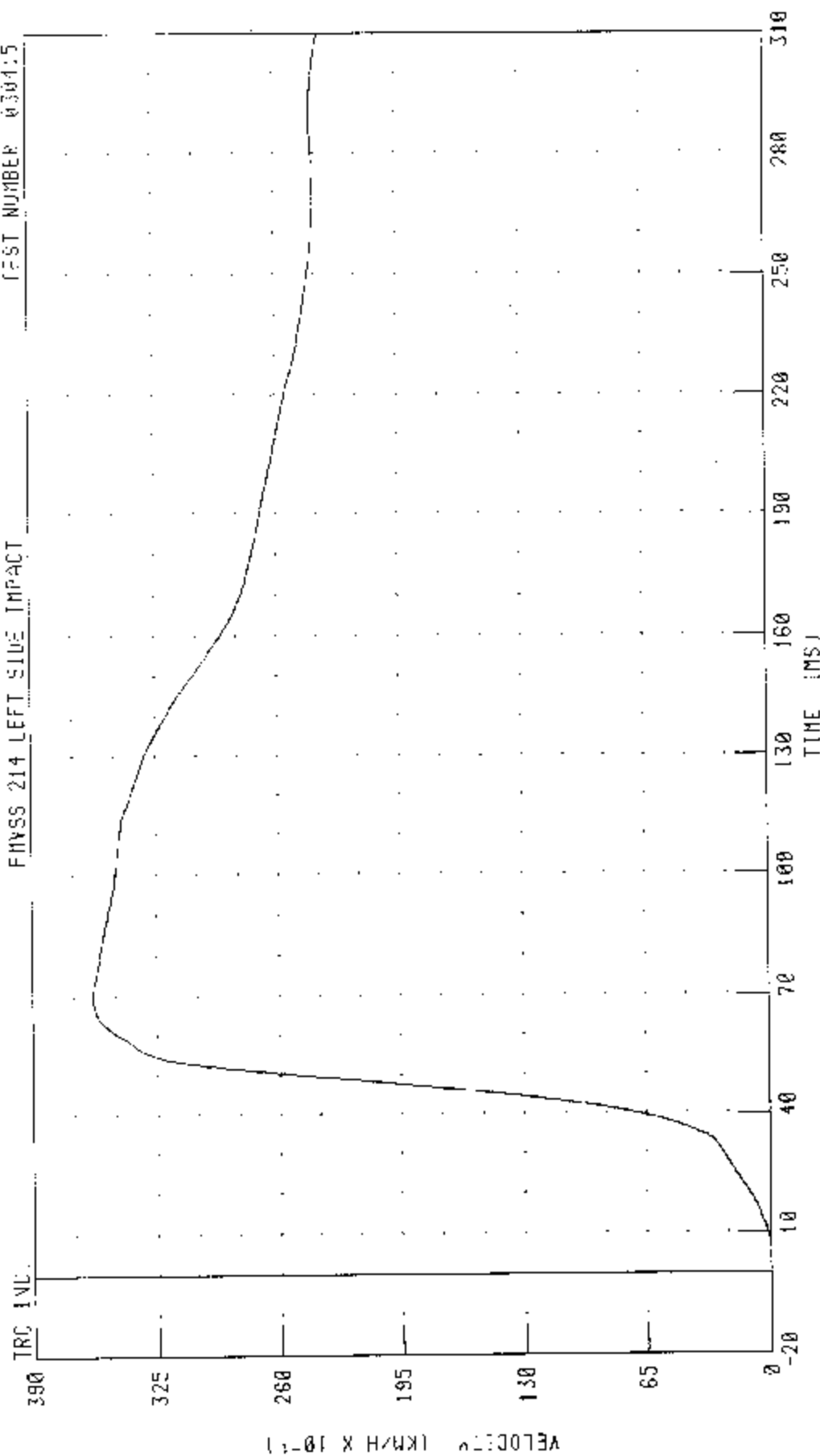
TFST NUMBER 030415

CHANNEL: PEVYG4 FILTER: CH CLASS 1000
 PEAK DATA: 71 55 6 49 20 MS, -4 47 6 148 72 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE OBJECT) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER PELVIS Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



PEAK DATA: 35.94 KM/H @ 69.84 MS, 0.00 KM/H @ 0.00 MS

CHANNEL: PEVYV4 FILTER: CH CLASS 1B0

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - Filter Class 1000 - Redundant

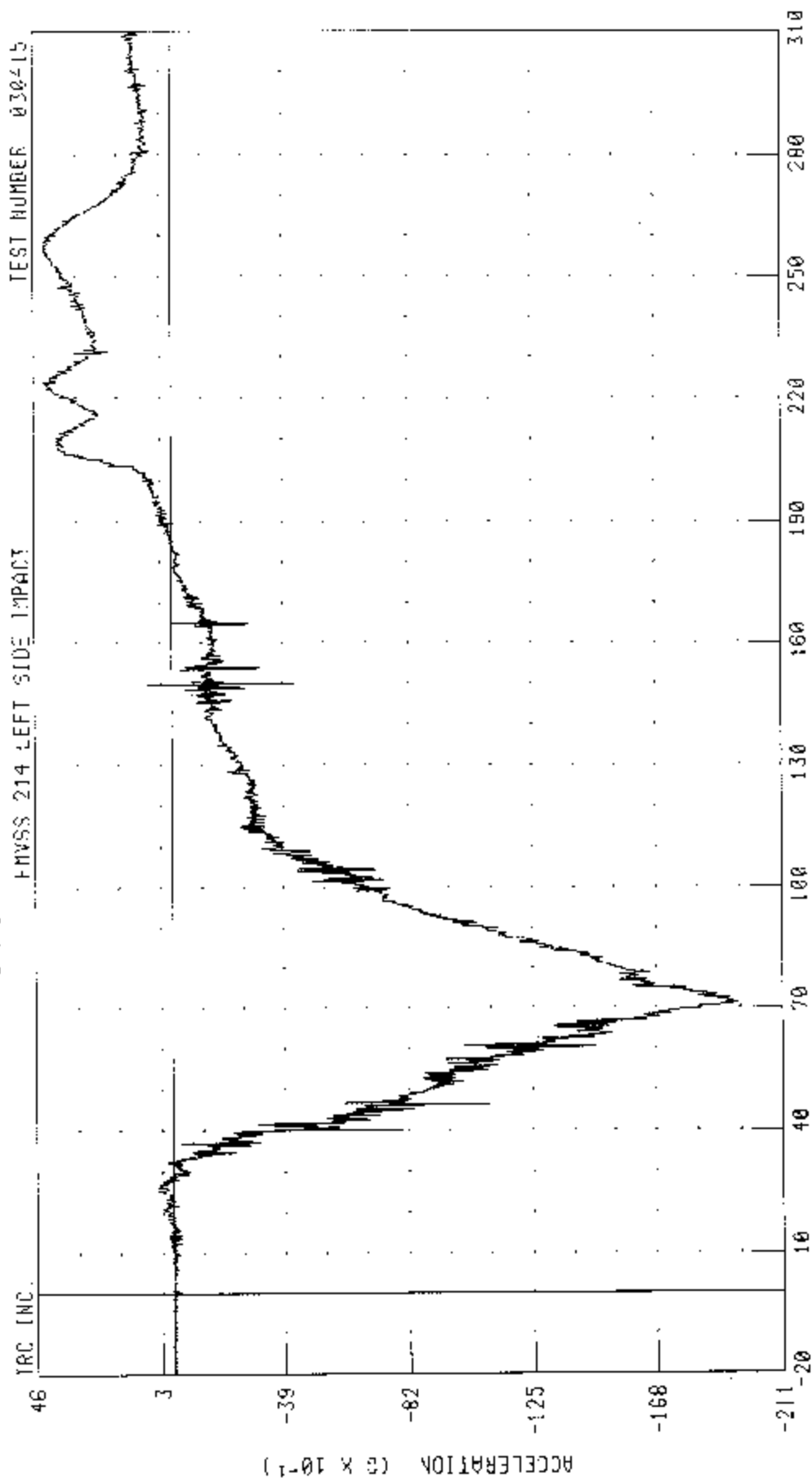
Integration Data - Filter Class 180 - Redundant

55/28 KPH 90 DEGREE GIRE IMPACT (MOVING CRYSTALINE BARRIER) INFO FET 1111 11 2003 SUBARU LEGACY

DRIVER HEAD X-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



CHANNEL HEDXR1 FILTER CH. CLASS 1000

PEAK DATA: 436.06 224.00 MS; -19.60 5.9 71.12 MG

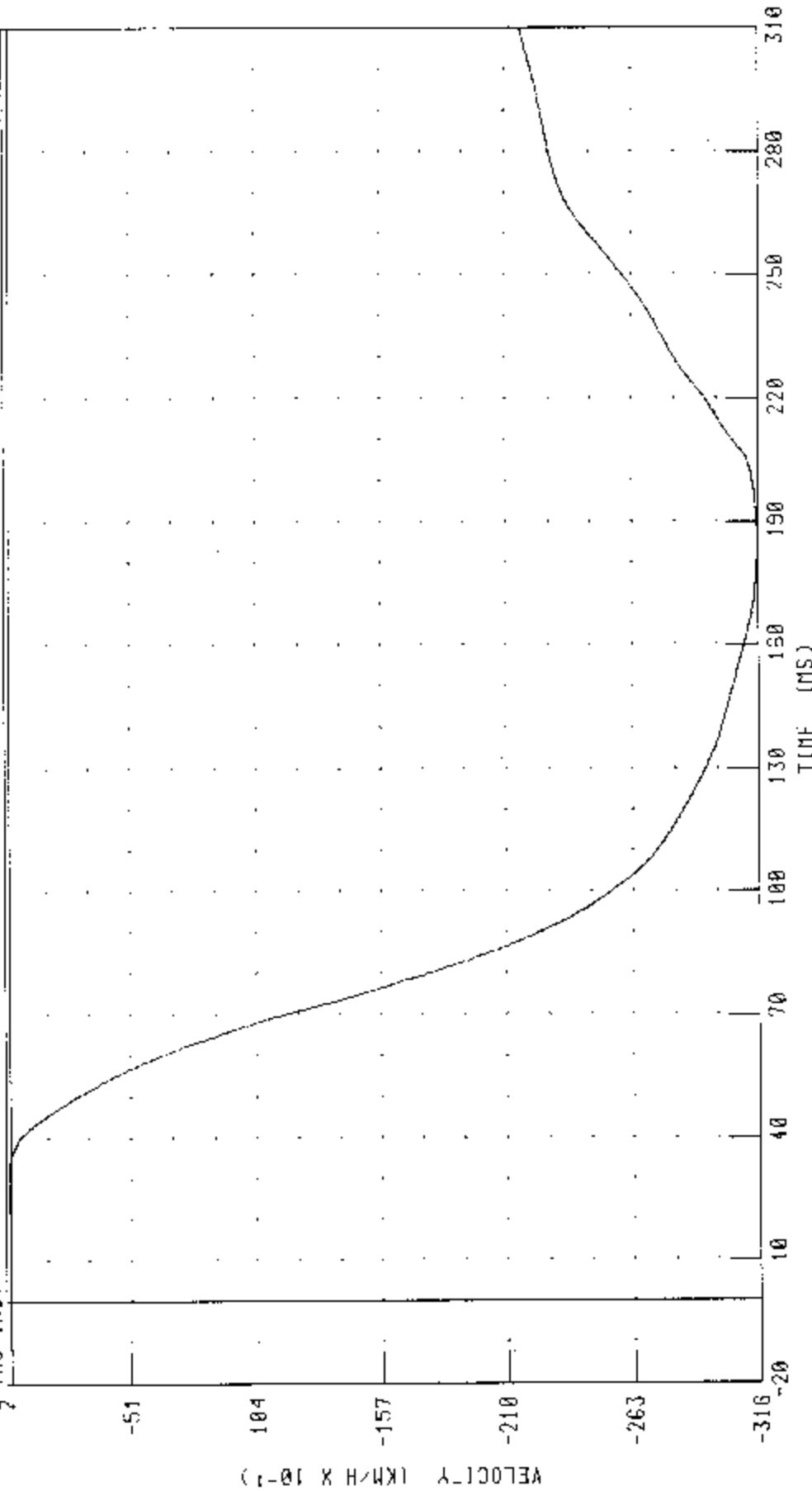
55/28 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER HEAD X-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



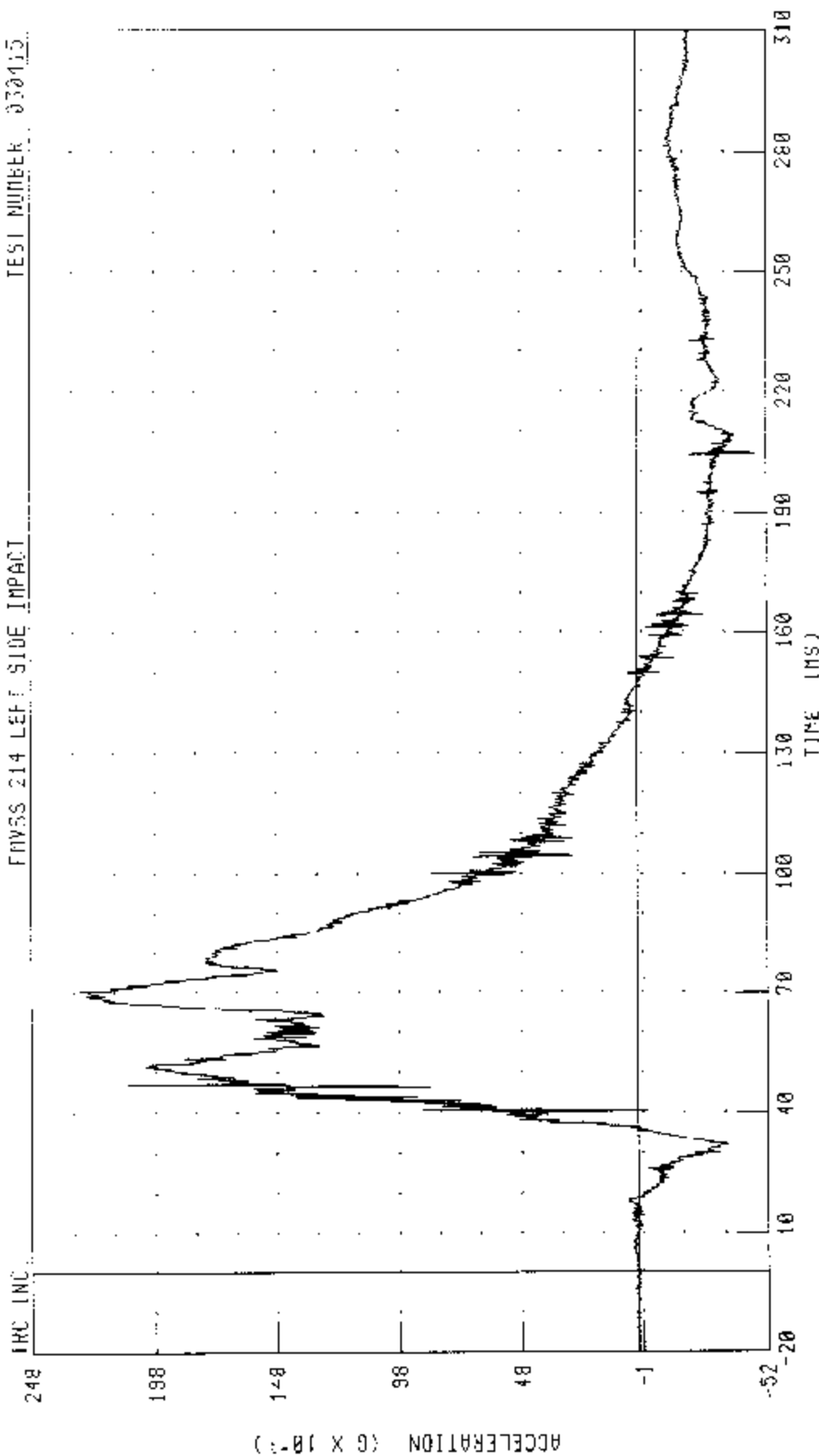
PEAK DATA: 0.06 KM/H @ 28.96 MS, 31.55 KM/H @ 184.16 MS

CHANNEL: HEDXVI FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU IMPRINT

DRIVER HEAD Y AXIS EQUIPMENT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415

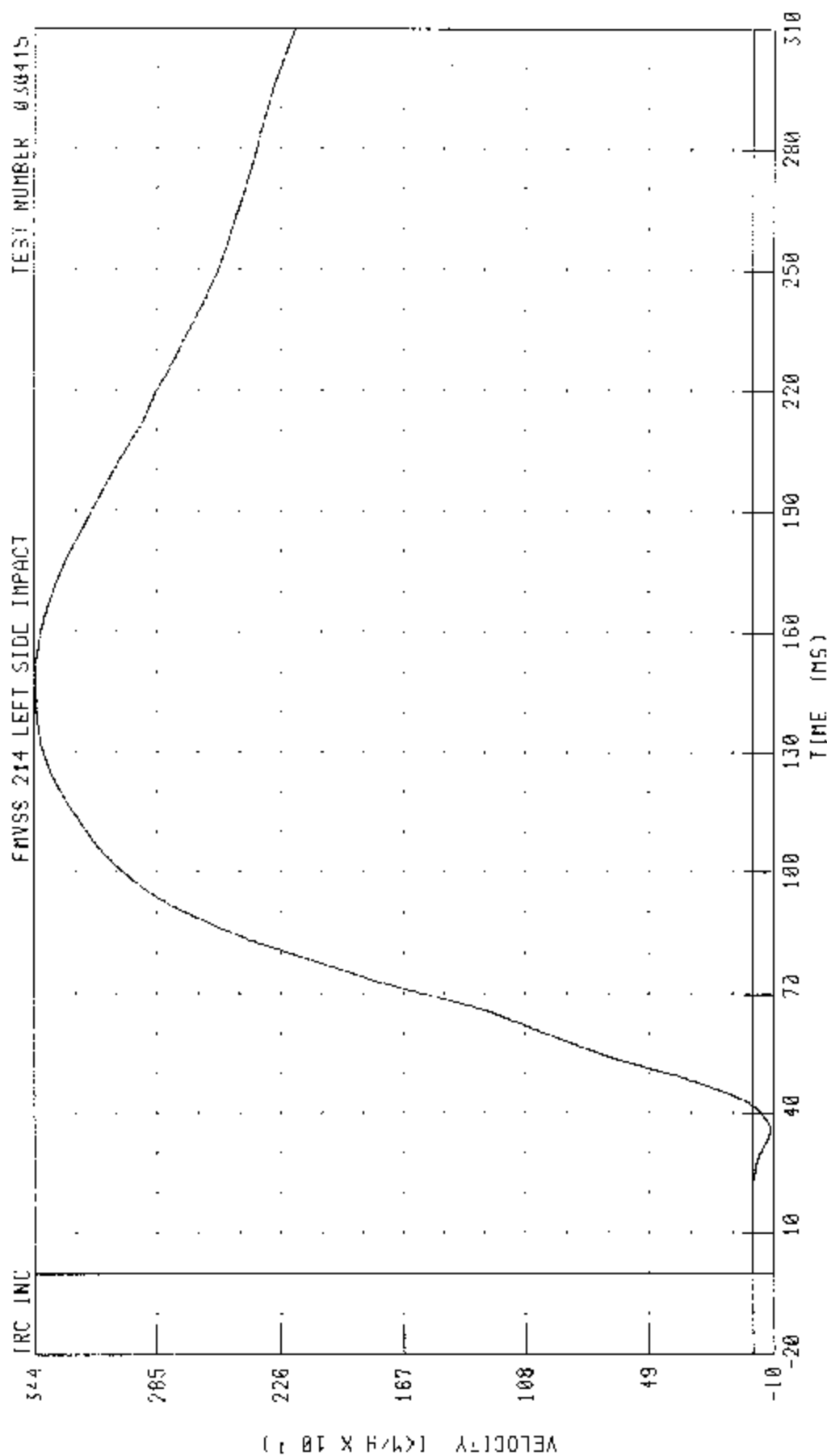


CHANNEL HEADYR1 FILTER CH CLASS 1000

PEAK DATA 22.85 G @ 70.48 MS, -4.75 G @ 204.83 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2037 SUBARU LEGACY

DRIVER HEAD Y-AXIS REBOUND VELOCITY



CHANNEL: HEDYVI FILTER CH. CLASS 180

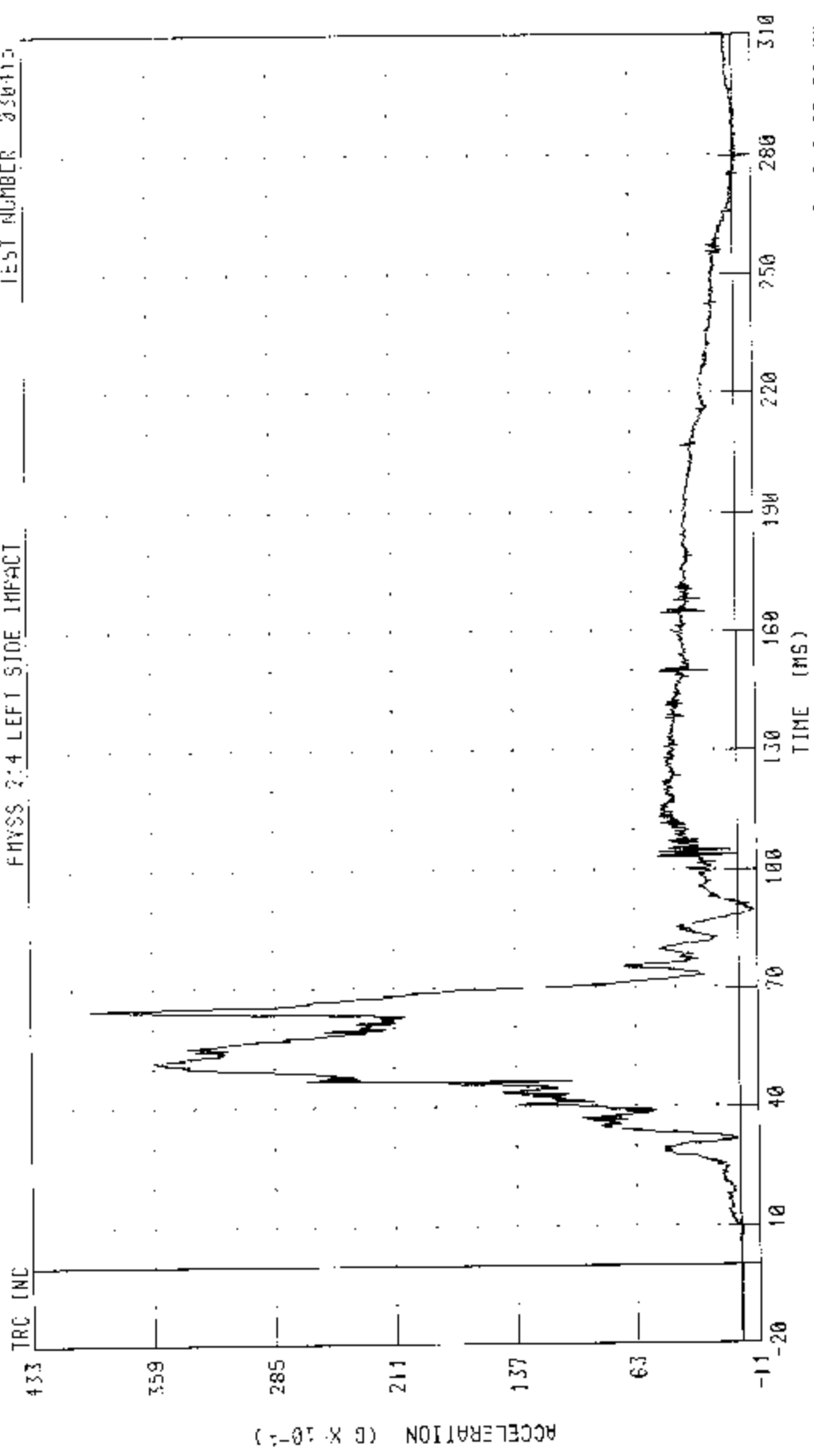
PEAK DATA: 34.36 KM/H @ 146.98 MS; -0.81 KM/H @ 36.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER: INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER HEAD Z-AXIS RESONANT ACCELERATION

TEST NUMBER 050415

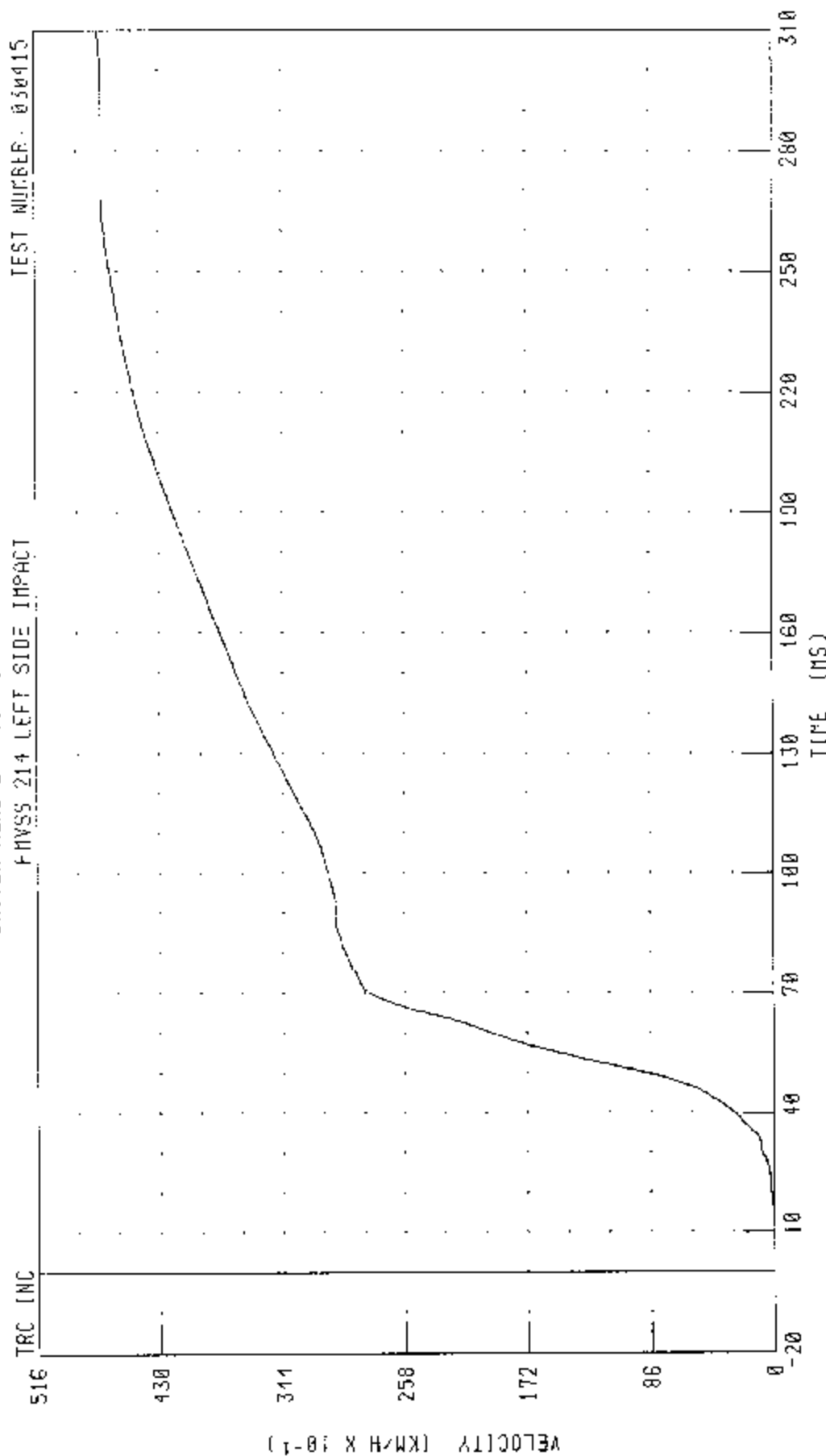
PHYS 2:4 LEFT SIDE IMPACT



PEAK DATA: 39 66 G @ 64 72 MS, -1.01 G @ 89 92 MS

CHANNEL: HE0ZR1 FILTER: CH. CLASS 1000

55-20 KPH 90 DEGREE SIDE IMPACT (MOVING OFFSHOULDER BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 DRIVER HEAD Z-AXIS REDUNDANT VELOCITY



PEAK DATA: 47 13 KM/H @ 310 00 MS, 0 20 KM/H @ 9 76 MS

CHANNEL HEDZVI FILTER CH. CLASS 180

55/28 KP-90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF CAR'S SUBARU LEGACY

DRIVER HEAD REDUNDANT RESULTANT ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC

486

405

324

243

162

81

0

-20

10

40

70

100

130

160

190

220

250

280

310

340

370

400

430

460

490

520

550

580

610

640

670

700

730

760

790

820

850

880

910

940

970

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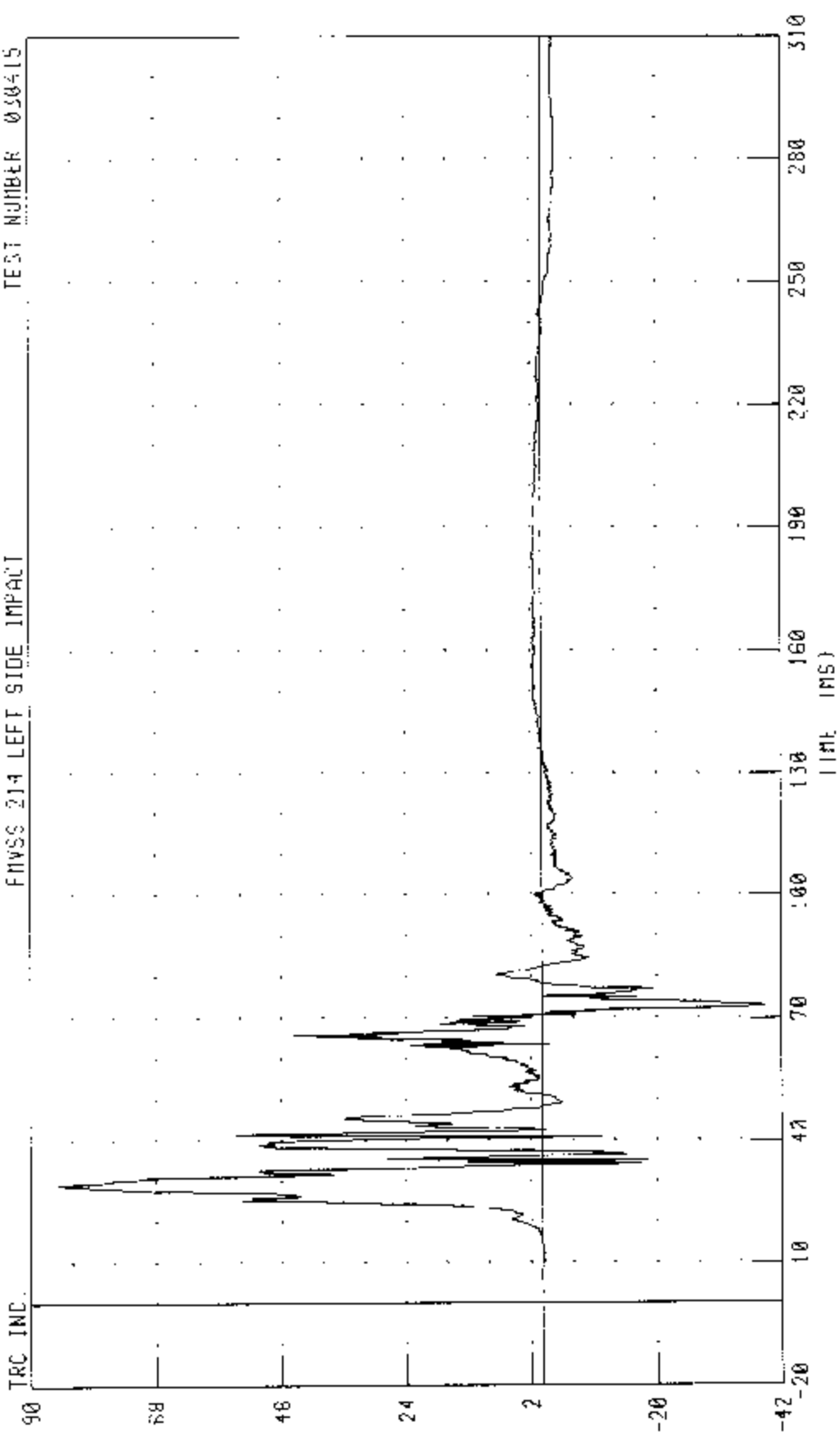
9460

9490

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER UPPER RIB Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



PEAK DATA 85 00 G @ 29.36 MS, -38.84 G @ 73.04 MS

CHANNEL LURYR1 FILTER: CH. CLASS 1000

ACCELERATION (G)

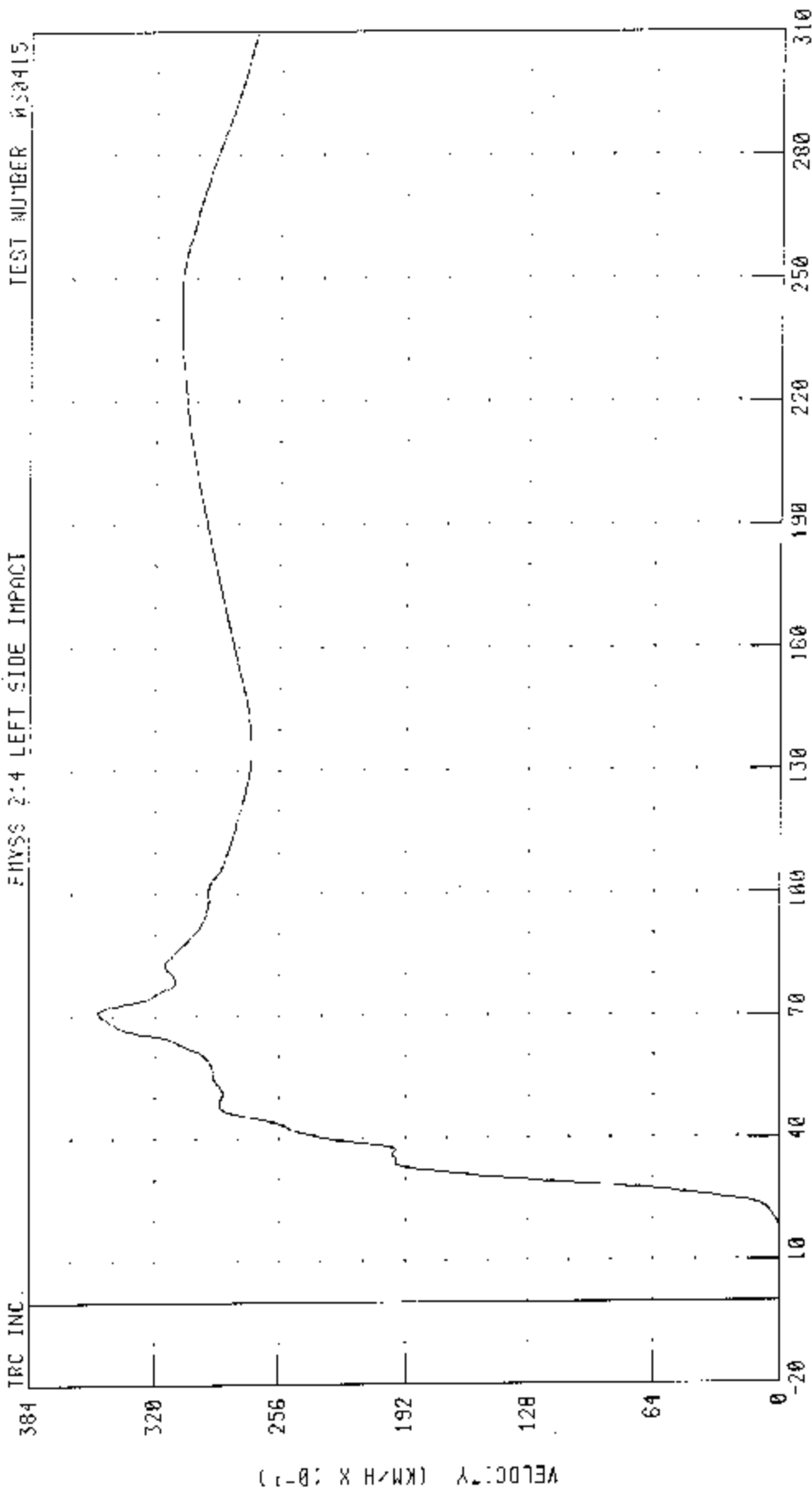
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING OFFROADABLE SURFIER) INTO LEFT SIDE OF 2003 SUDARU LEGACY

DRIVER UPPER R13 Y-AXIS REDUNDANT VELOCITY

TEST NUMBER 030415

ENVSS 2:4 LEFT SIDE IMPACT

TRC INC.



TIME (MS)

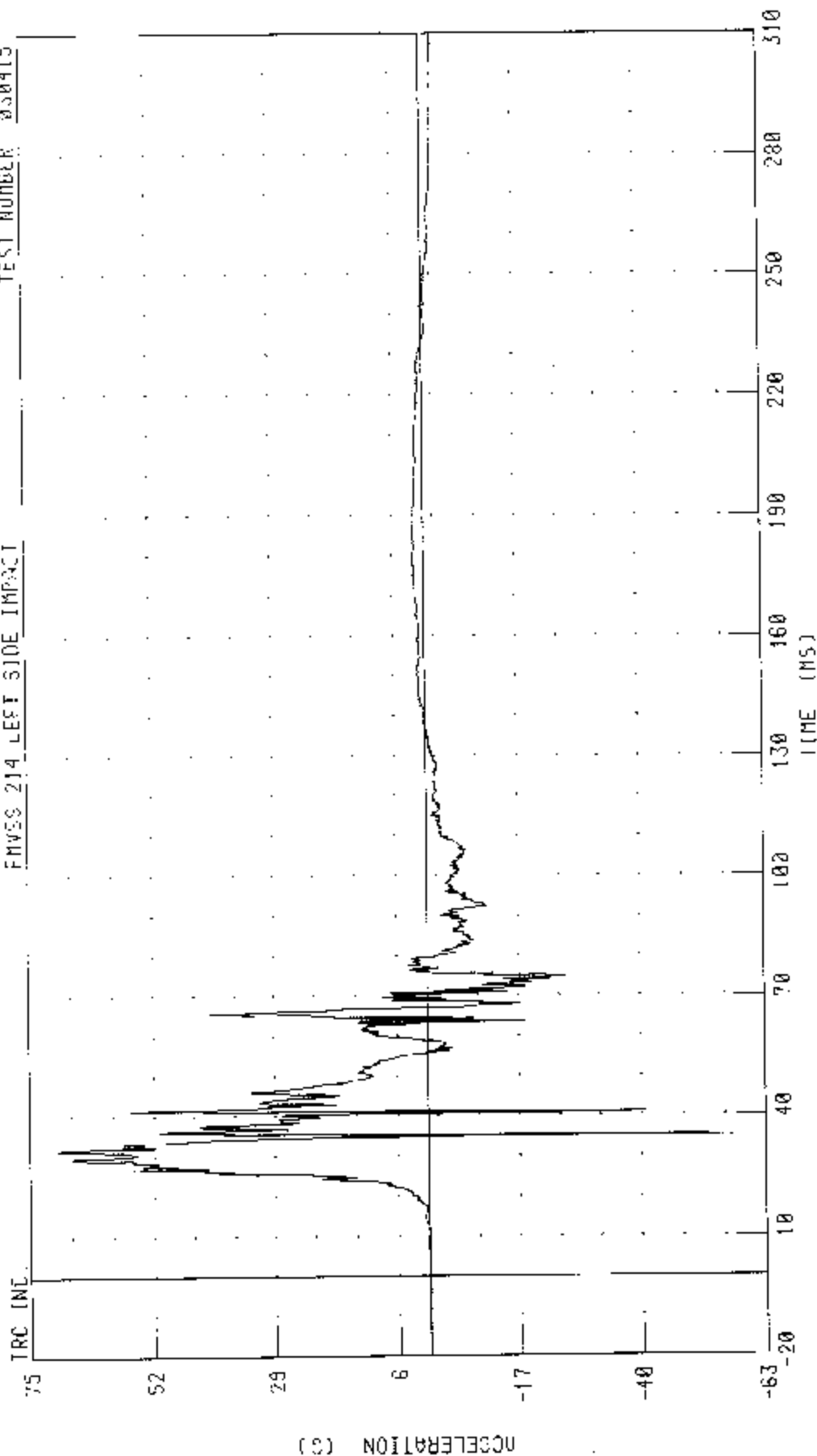
CHANNEL: LURYV1 FILTER: CH. CLASS 150

PEAK DATA 34.93 KM/H @ 70.90 MS, 0.00 KM/H @ 0.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



PEAK DATA: 69.88 G @ 31.84 MS, -57.94 G @ 35.20 MS

CHANNEL L_RYR1 FILTER: CII, CLASS 1000

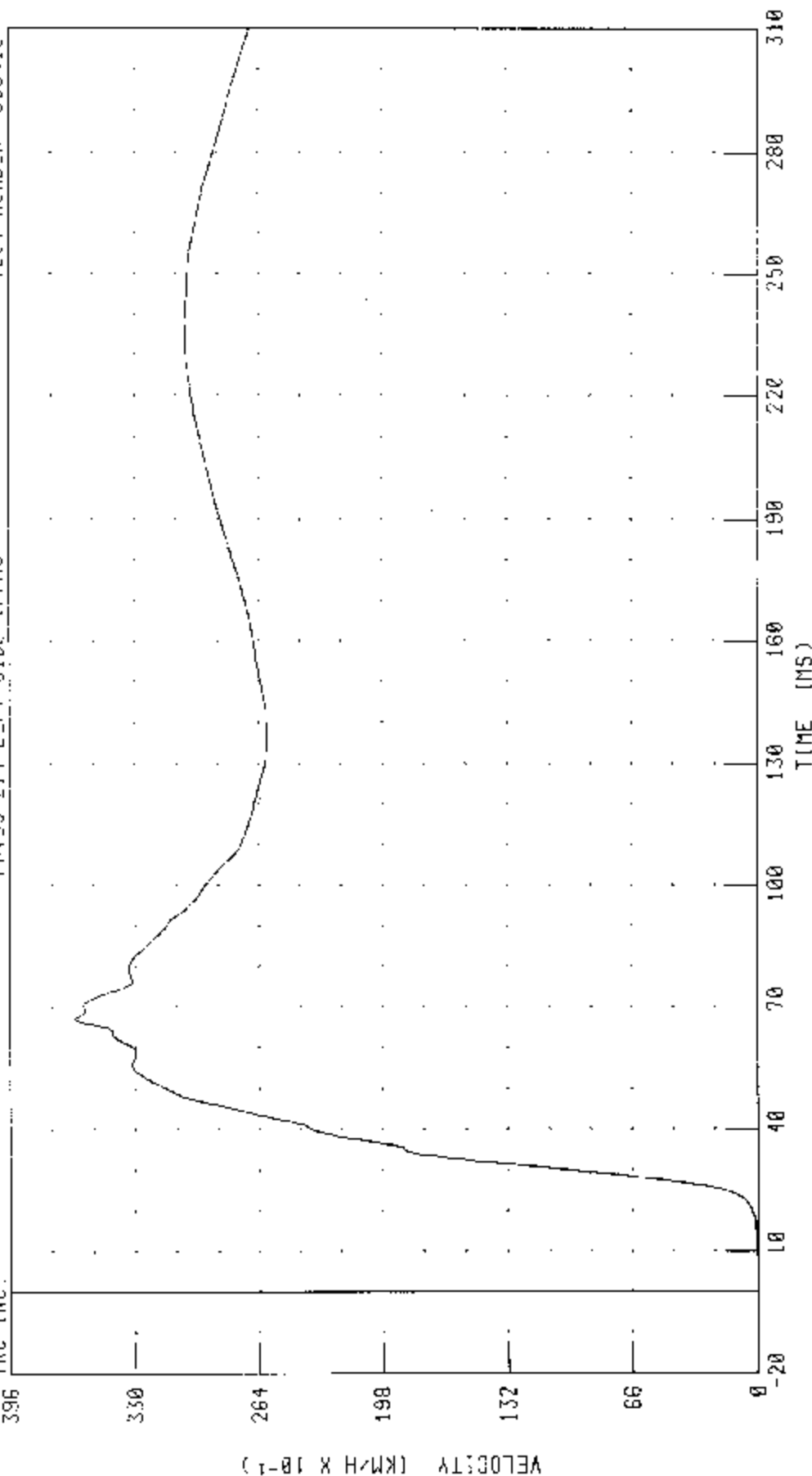
55/28 KPH 30 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF CAR3 SUPARAIL FENCY

DRIVER LOWER RIB Y-AXIS REDUNDANT VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415

TRC INC.



CHANNEL: LLRYVI FILTER: CH CLASS: 180

PEAK DATA: 36.18 KM/H @ 67.12 MS, 0.00 KM/H @ 0.00 MS

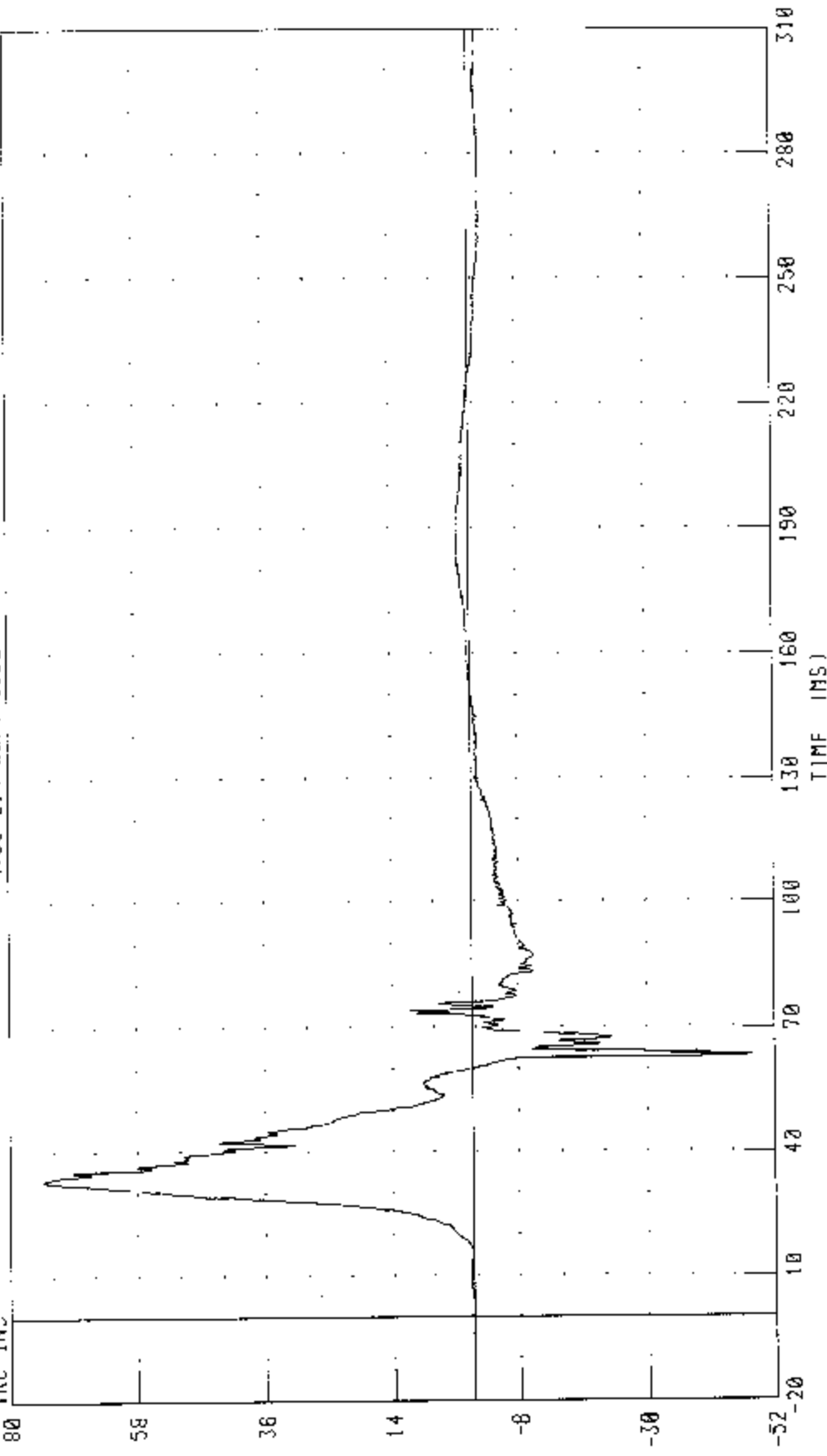
55/28 MPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER LOWER SPINE V-HZ'S REDUNDANT ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



PEAK DATA 74 30 G @ 33 20 MS, -47 99 G @ 63 20 MS

CHANNEL T12YR1 FILTER: CH. CLASS 1000

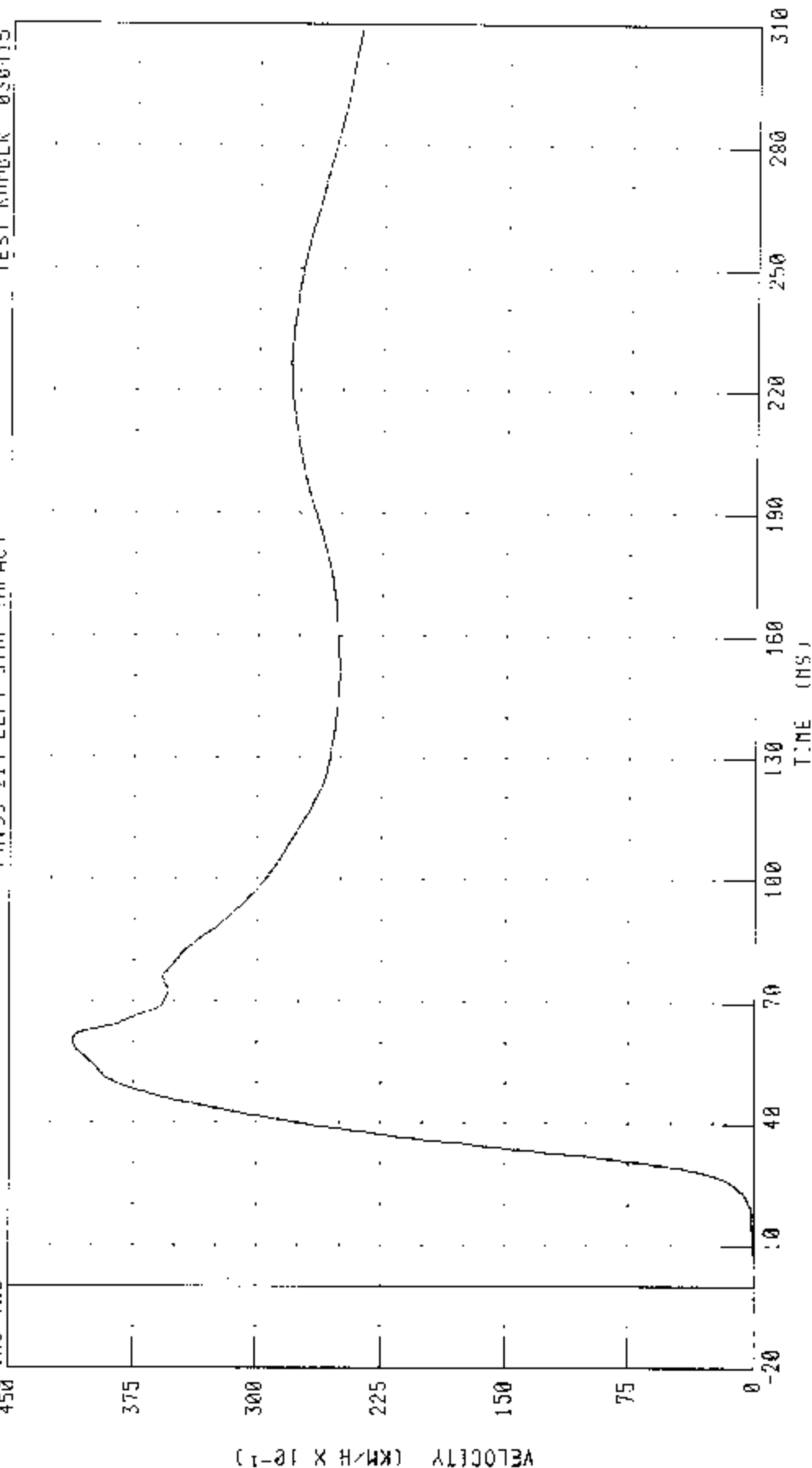
55/28 KPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2000'S SUBARU LEGACY

DRIVER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

TRC INC

FHVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



TIME (MS)

CHANNEL T12YVI FILTER: CH CLASS 120

PLAK DATA 4: 17 KM/H @ 60 32 MS, 0 00 KM/H @ 0 00 MS

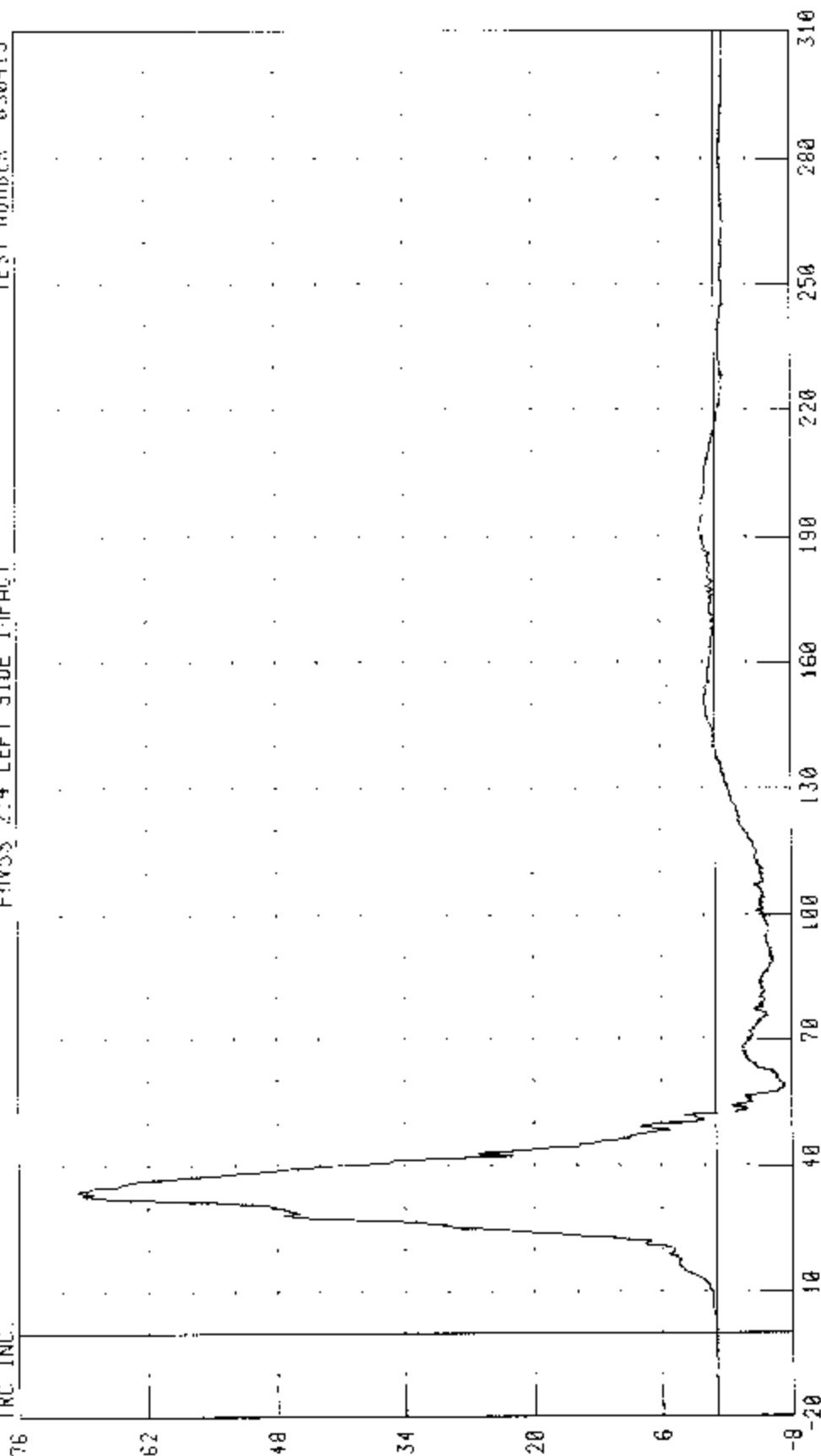
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER PELVIS Y-AXIS REDUCED/NET ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



ACCELERATION (G)

TIME (MS)

CHANNEL: PEVYR1 FILTER: CH CLASS 1000

PEAK DATA: 69.80 G @ 34.24 MS, -7.36 G @ 58.72 MS

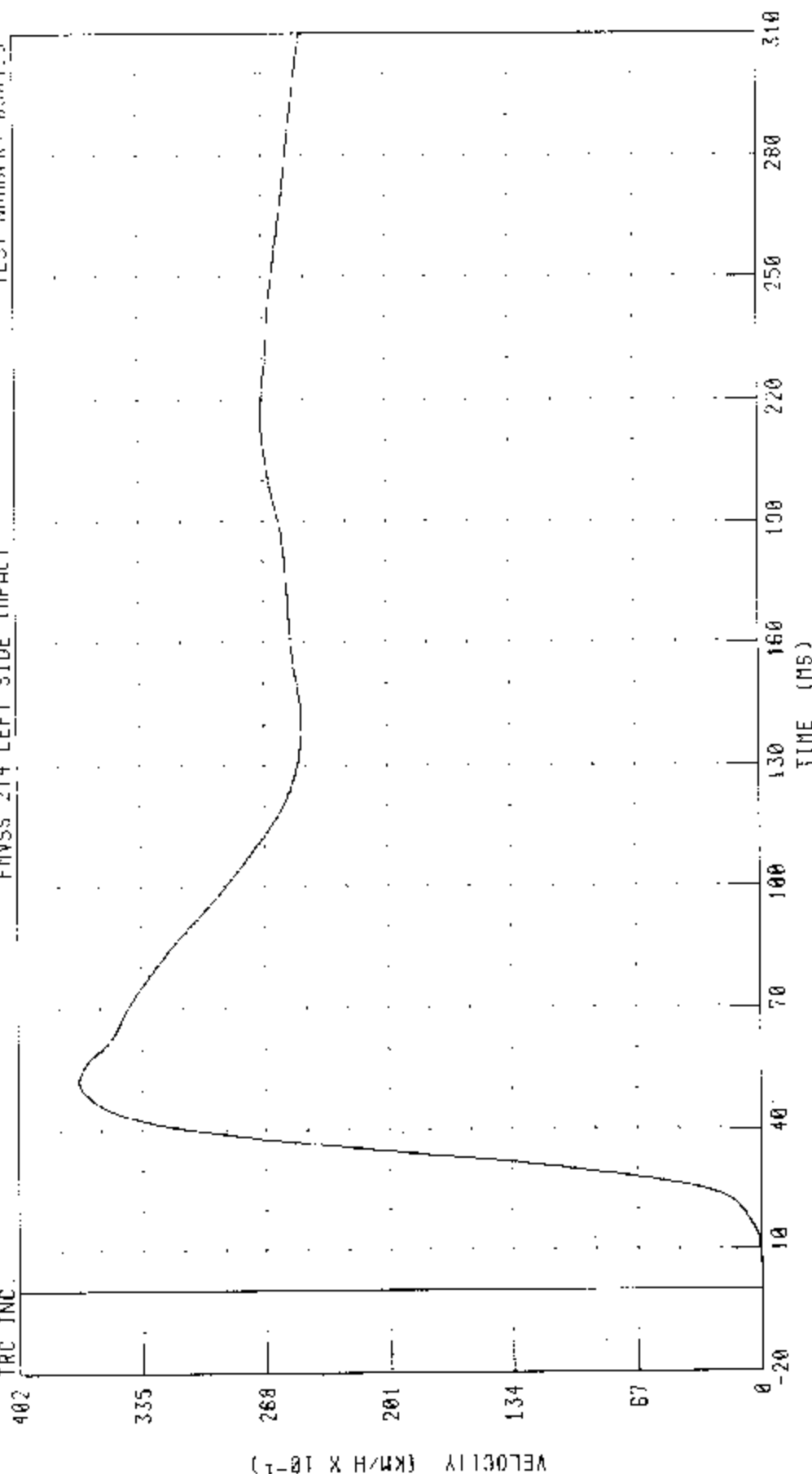
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER - INIO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER PEDESTAL X-AXIS REDUNDANT VELOCITY

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



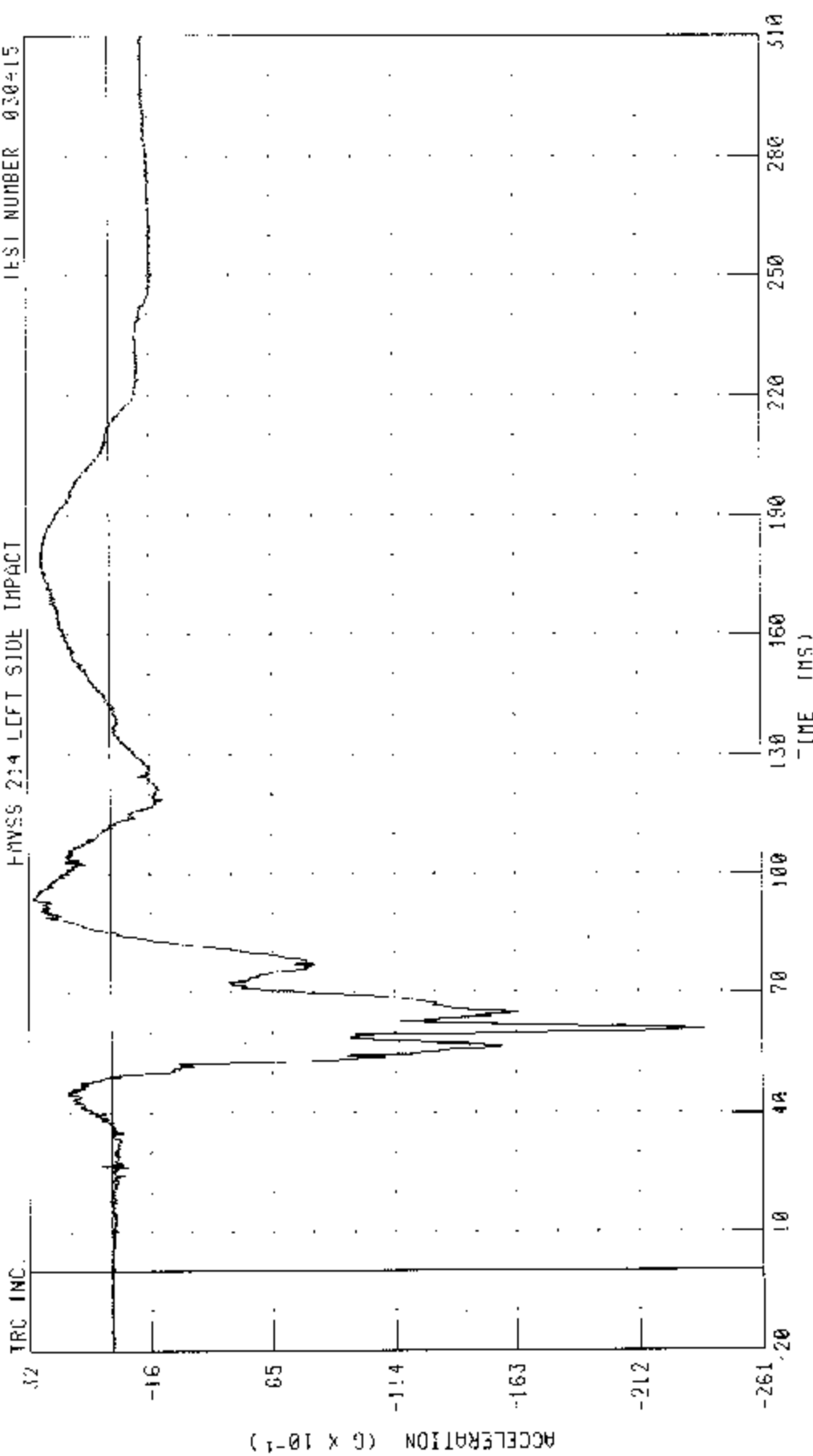
PEAK DATA 33.92 KM/H @ 52.24 MS: 0.00 KM/H @ 0.00 MS

CHANNEL PEYV1 FILTER CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER HEAD X AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415

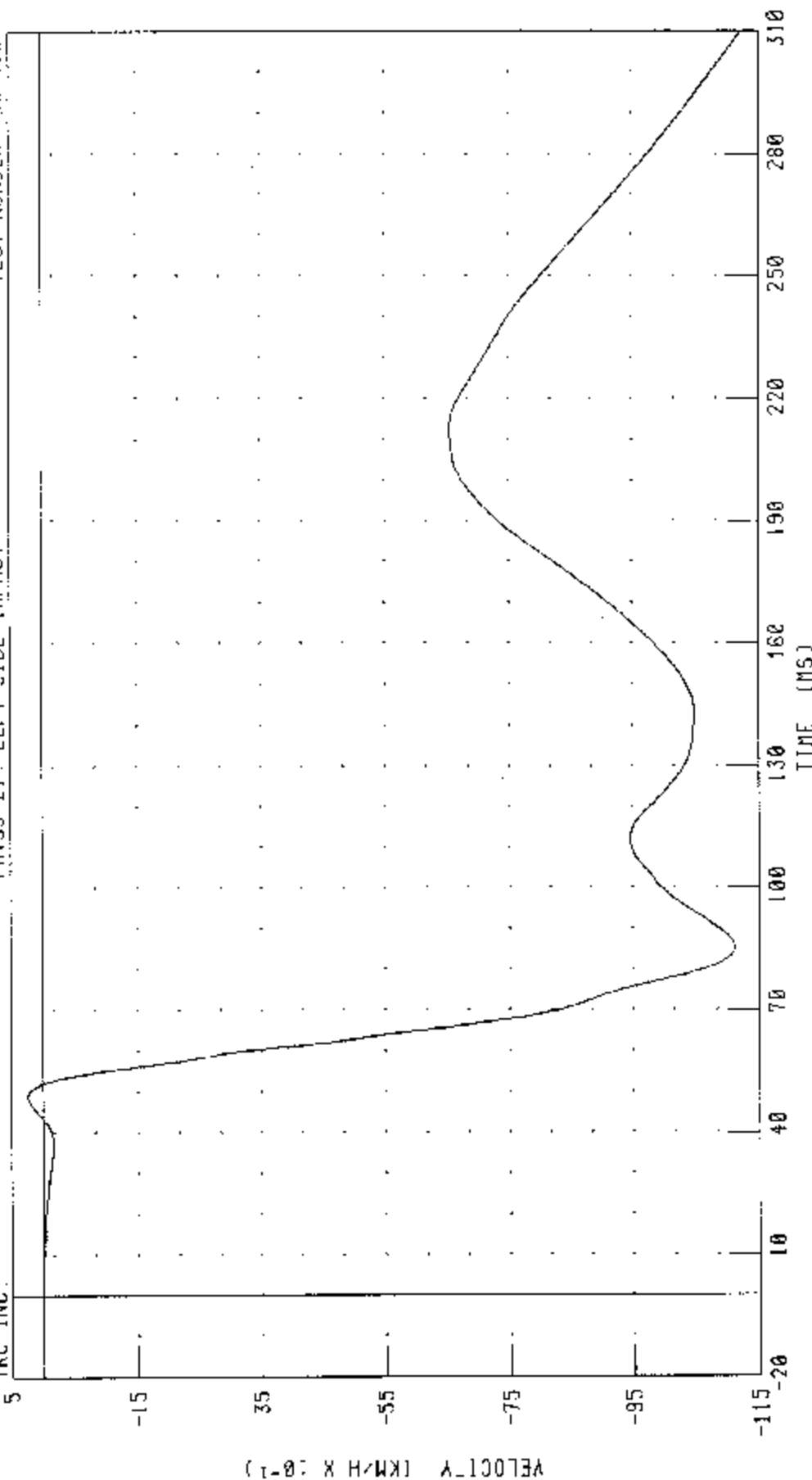


PEAK DATA: 3 09 G @ 93.84 MS, 23.83 G @ 60.80 MS

CHANNEL HEDXR4 FILTER CH CLASS 1200

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEF: REAR PASSENGER HEAD X-AXIS REDUNDANT VELOCITY

TRC INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415

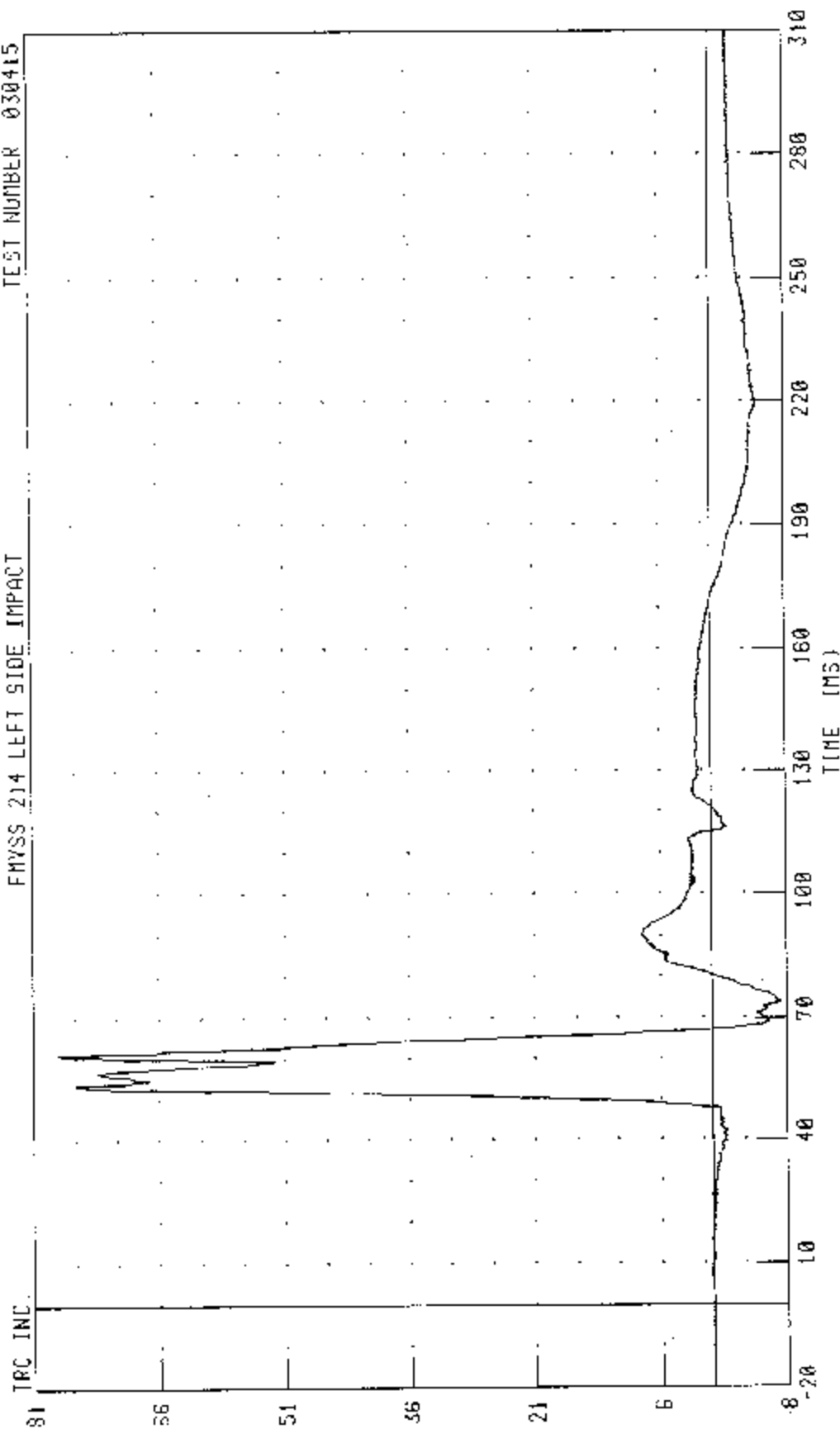


PEAK DATA: 0 23 KM/H @ 49 04 MS, -11 23 KM/H @ 310 00 MS

CHANNEL: HEDXVJ FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU IMPREZA
 IFF: REAR PASSENGER HEAD Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



ACCELERATION (G)

TIME (MS)

CHANNEL: HEDVR4 FILTER: CH. CLASS 1000

PEAK DATA: 78.09 G @ 61.20 MS; -8.10 G @ 74.00 MS

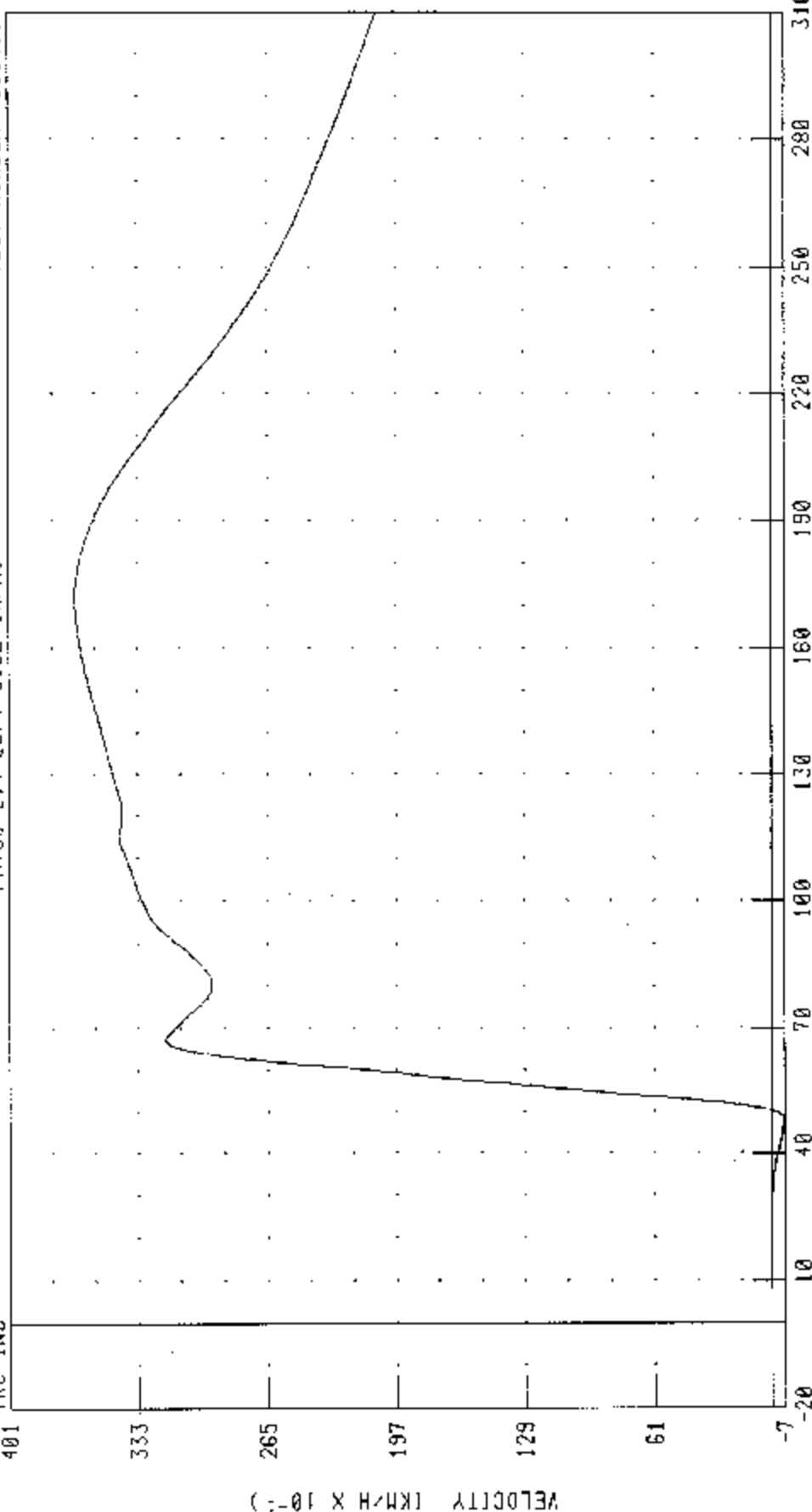
55/28 KPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER HEAD Y-AXIS REDUCED VELOCITY

IES: NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



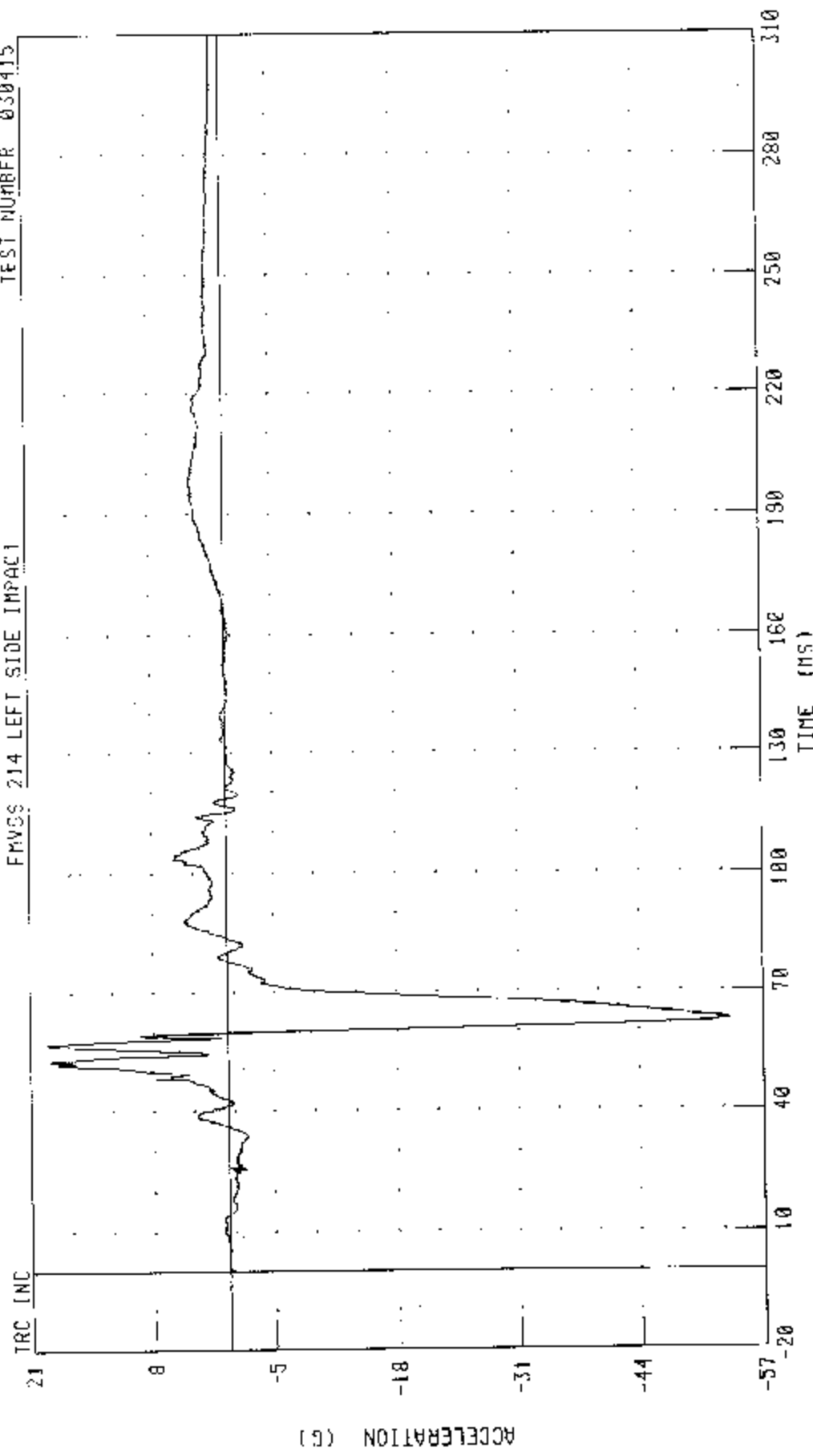
TIME (MS)

PEAK DATA: 36 59 KM/H @ 172 00 MS; -0 67 KM/H @ 47 92 MS

CHANNEL: HEDYVJ FILTER: CH CLASS 180

55/28 KP11 90 DEGREE SIDE IMPACT - MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
LEFT REAR PASSENGER HEAD Z-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



PEAK DATA: 19.26 G @ 53.88 MS; -53.37 G @ 62.88 MS

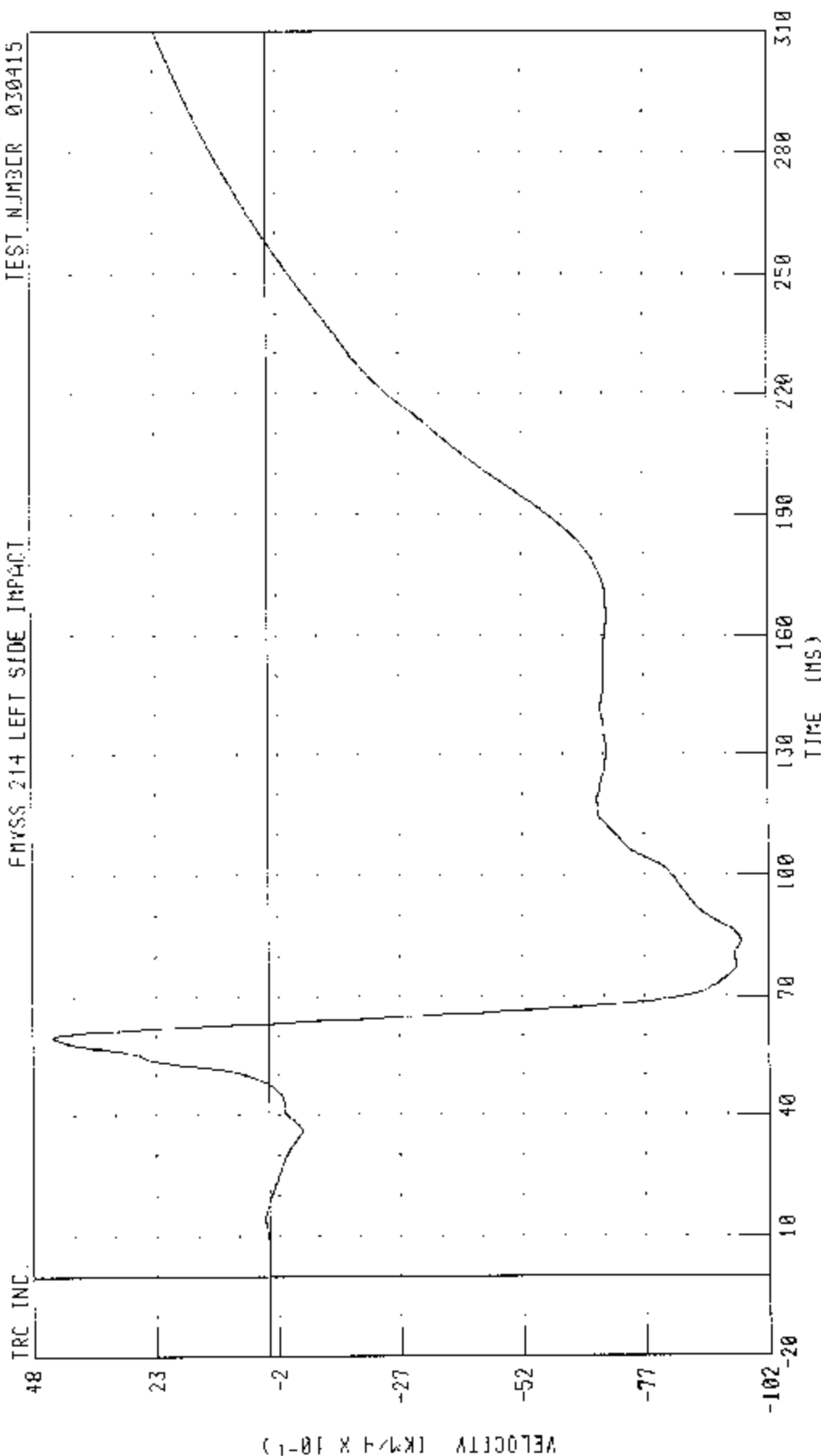
CHANNEL HEDZR4 FILTER: CH. CLASS 1000

55/28 KPH 90 DEGREE SIDE IMPACT: MOVING DEFORMABLE BARRIER: INTO LEFT SIDE OF 2003 SUGARU LEADY

LEFT REAR PASSENGER HEAD Z AXIS REDUNDANT VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



TIME (MS)

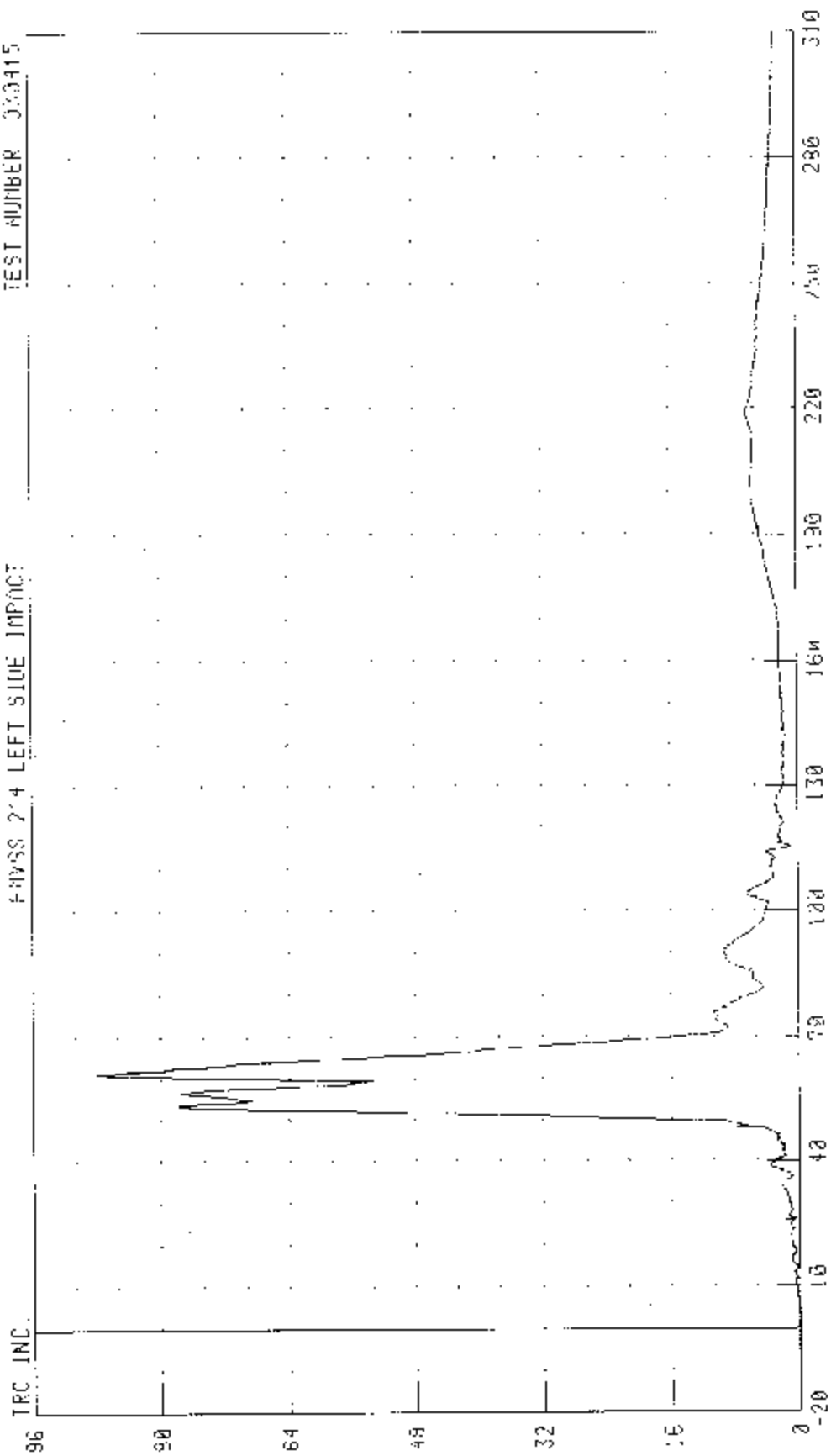
PEAK DATA: 4.38 KM/H @ 59.84 MS, -5.65 KM/H @ 83.92 MS

CHANNEL: HEDZVJ FILTER: CH. CLASS 180

55/20 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER HEAD RECONCANT RESUL INAI ACCELERATION

TEST NUMBER 030415

PHASE 274 LEFT SIDE IMPACT

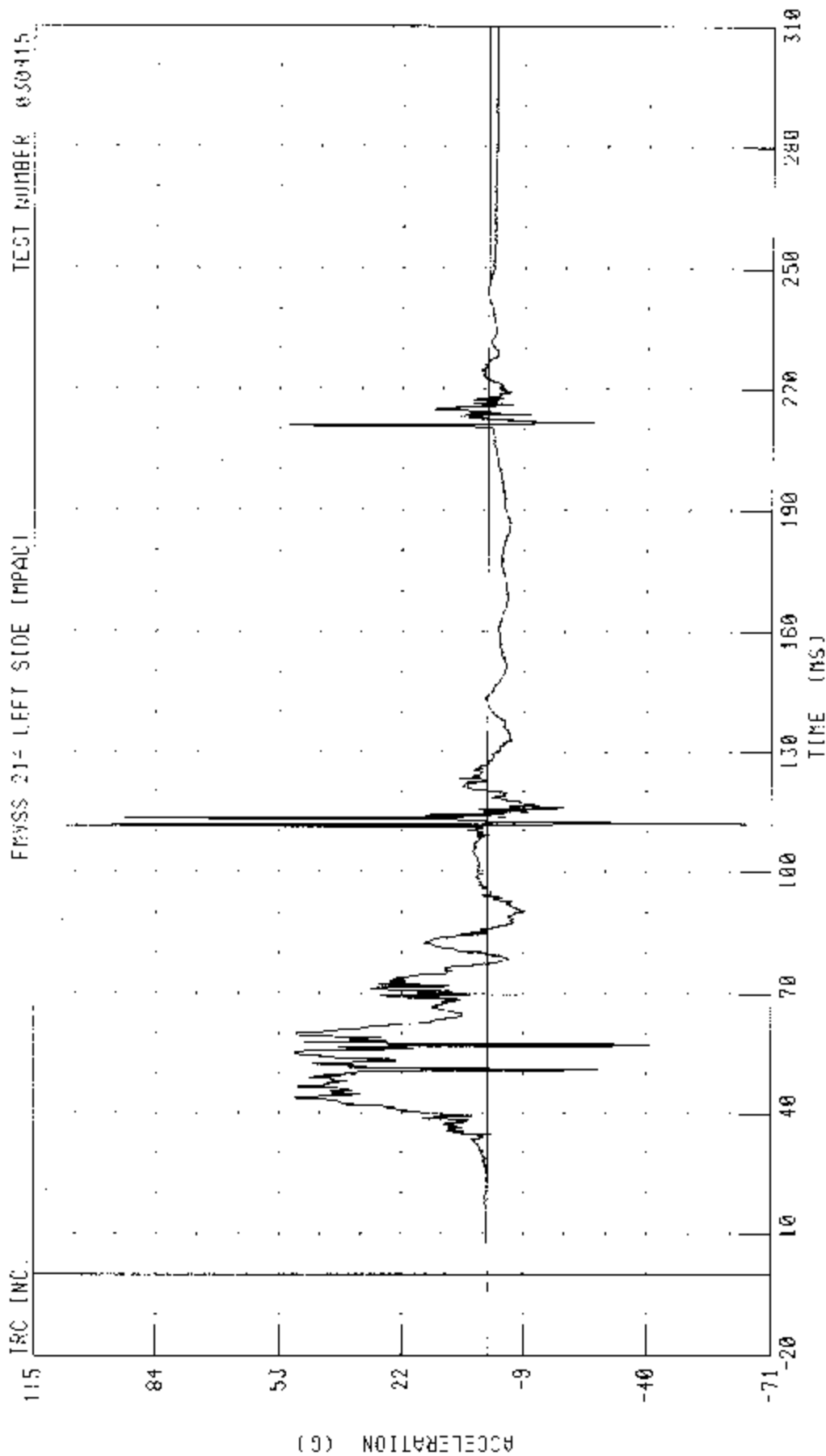


TIME (MS)

PEAK DATA 97.98 G 3.03 20 MS, 0.01 0.3 -19.24 MS

CHANNEL HEDRR4 FILTER CH. CLASS 1000

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER UPPER RIR Y AXIS REDUNDANT ACCELERATION



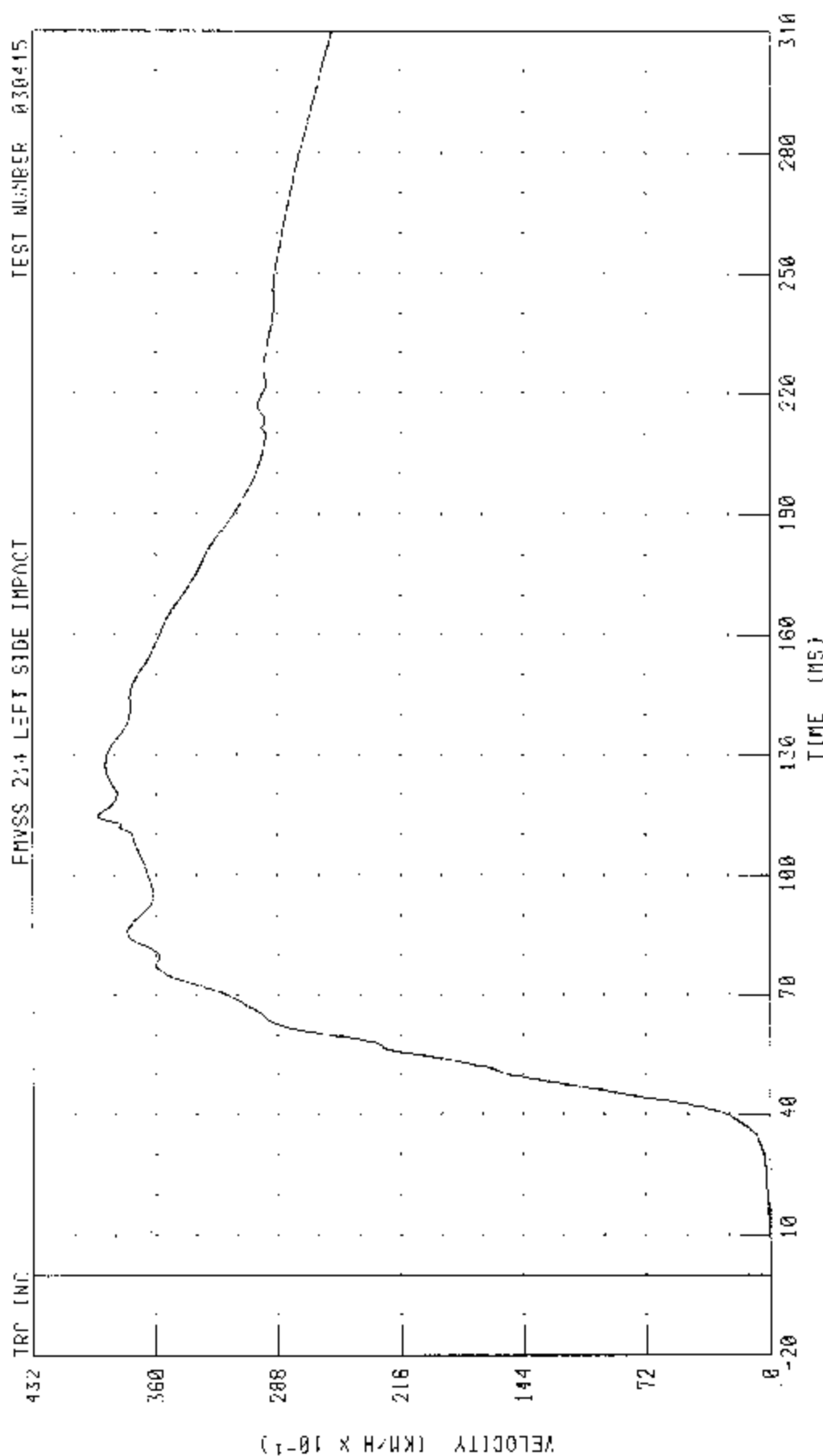
CHANNEL LURYR4 FILTER: CH. CLASS 1000

55/20 KPH 30 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER UPPER RIB Y-AXIS REDUNDANT VELOCITY

FMVSS 214 LEFT SIDE IMPACT

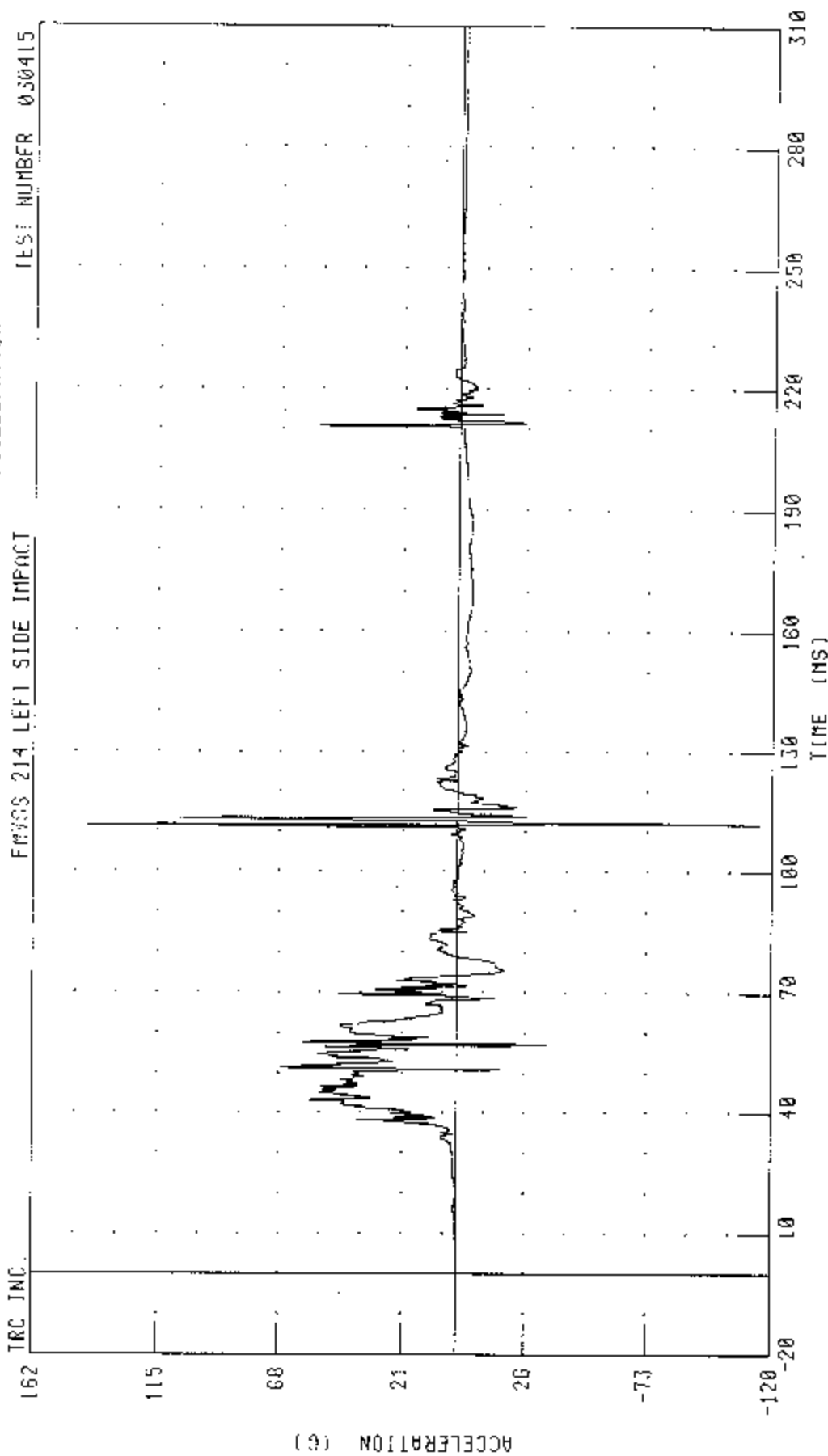
TEST NUMBER 030415



CHANNEL: LURYVJ FILTER: CH CLASS 180

PEAK DATA: 39 40 KPH/H @ 114 30 MS; 0 00 KPH/H @ 0 00 MS

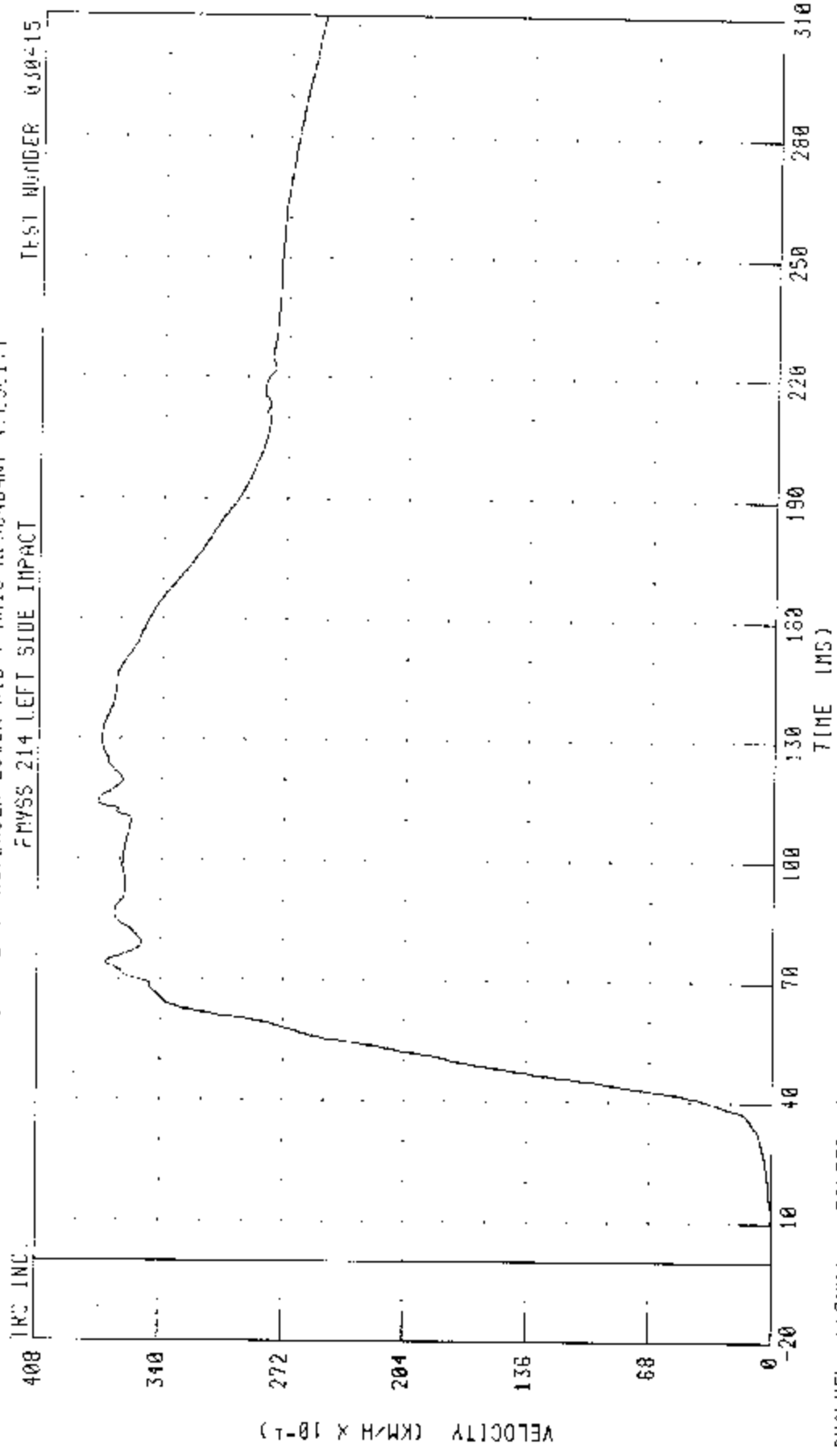
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION



CHANNEL: LLYR1 FILTER: CII CLASS 1000

PEAK DATA: 142.20 G @ 111.52 MS, -115.27 G @ 212.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUDAPU LEGACY
 LEFT REAR PASSENGER LOWER RIB Y AXIS REDUNDANT VELOCITY



TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

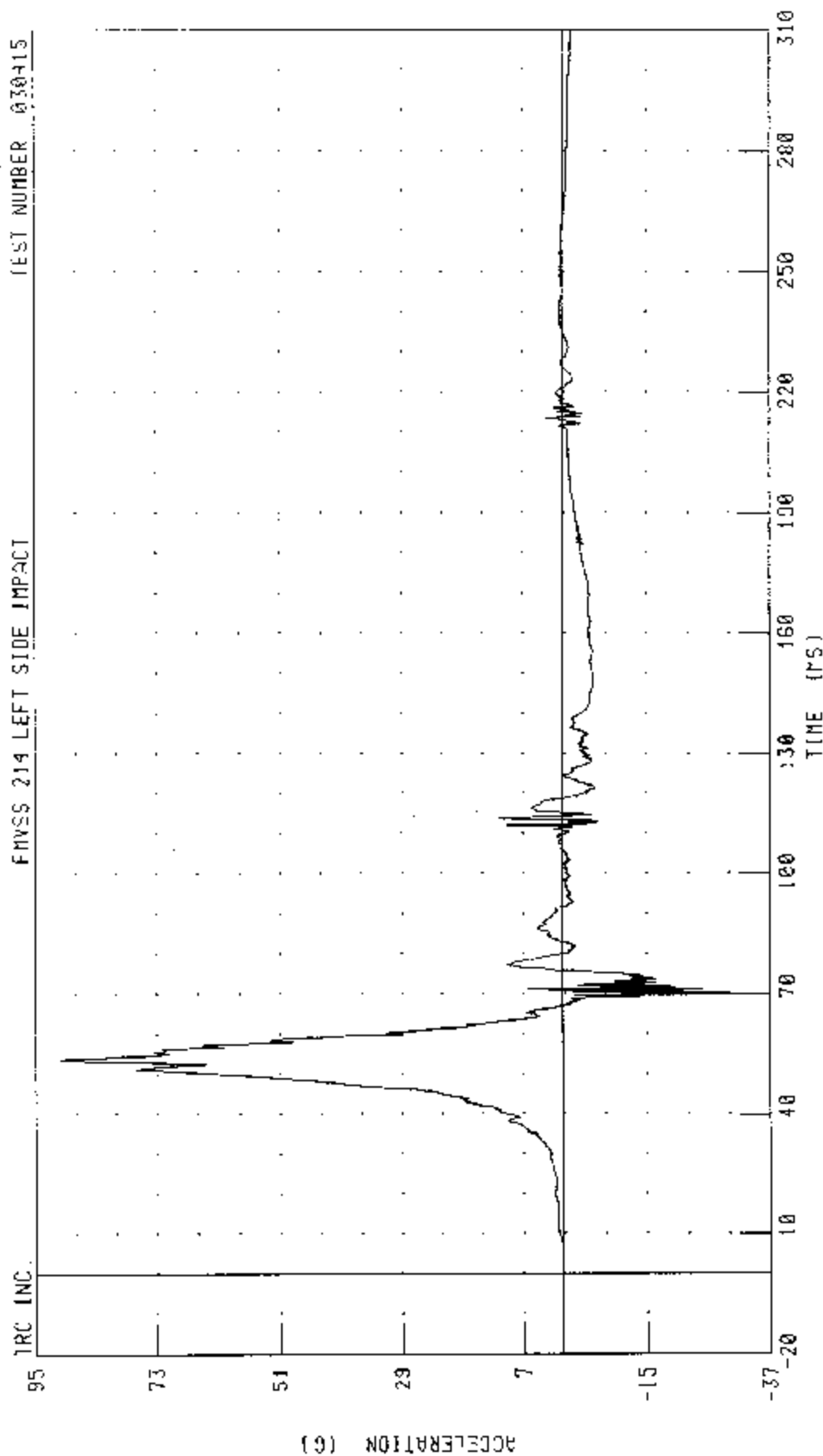
TIME (MS)

CHANNEL: LLRYVJ FILTER: CH CLASS 180
 PEAK DATA: 37 50 KM/H @ 114 32 MS, 0 00 KM/H @ 0 80 MS

55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



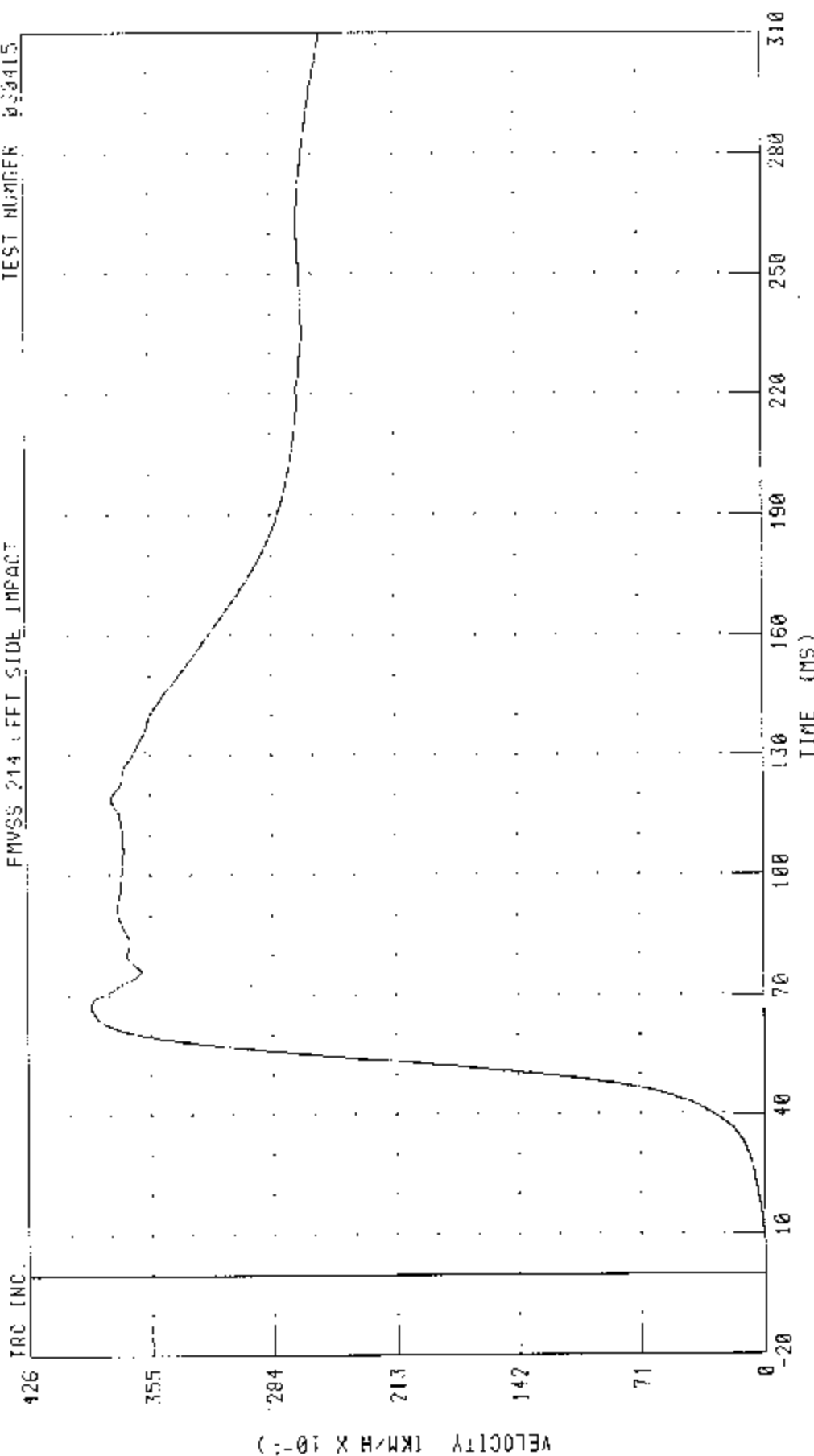
CHANNEL T12YR4 FILTER: CH. CLASS 1000

PEAK DATA: 90.51 G @ 54.00 MS; -33.92 G @ 70.24 MS

35/20 KPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER LOWER SPINE Y-AXIS REDUNDANT VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415

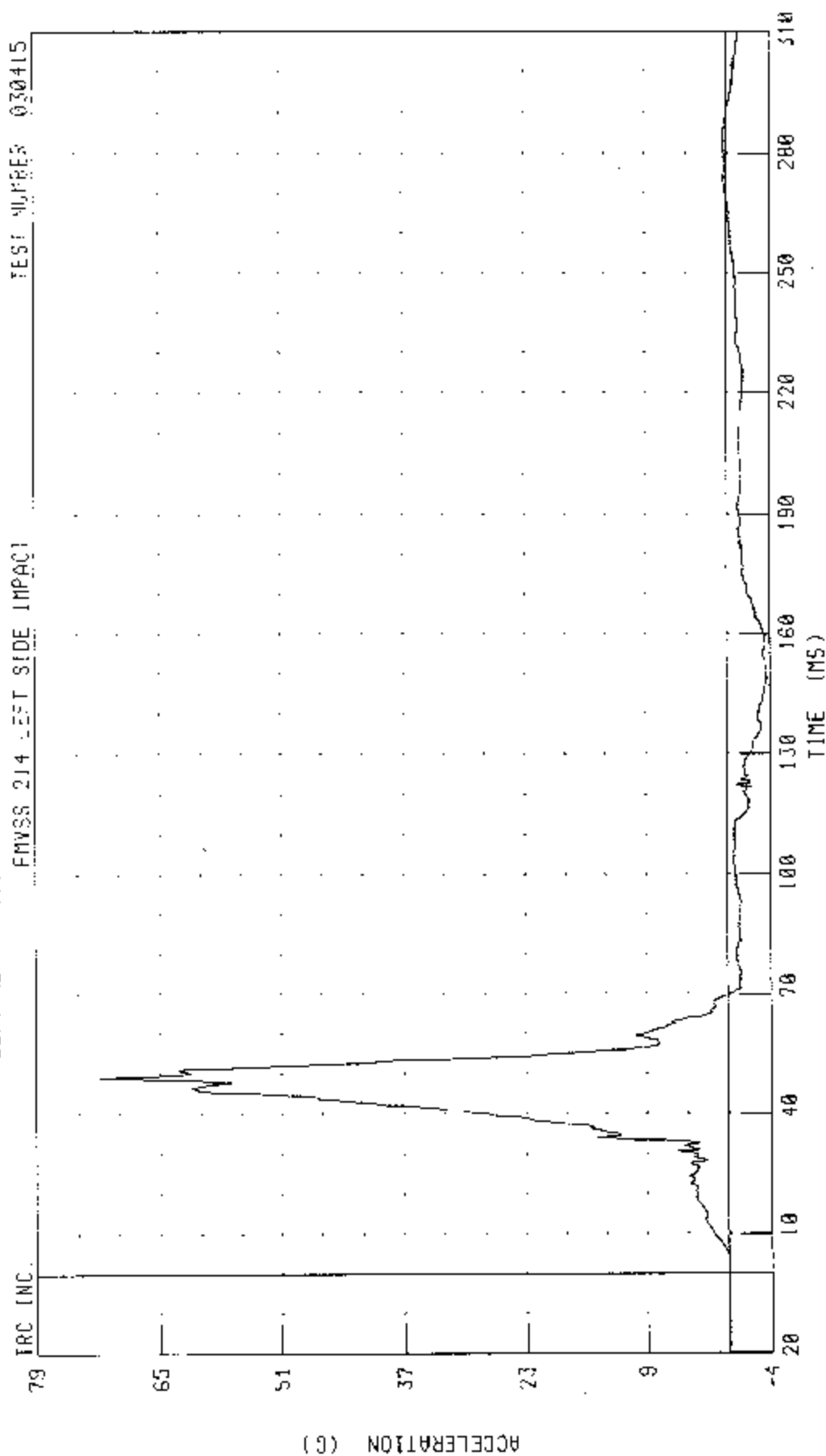


CHANNEL T12YVJ FILTER: CH. CLASS 180

PEAK DATA 38.95 KM/H @ 67.28 MS, 0.00 <M/H @ 0.00 MS

55-28 KPH 90 DEGREE SIDE IMPACT (MOVING AFFORDABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER PELVIS Y AXIS REDUNDANT ACCELERATION



CHANNEL: PEVYR4 FILTER CH CLASS 1000

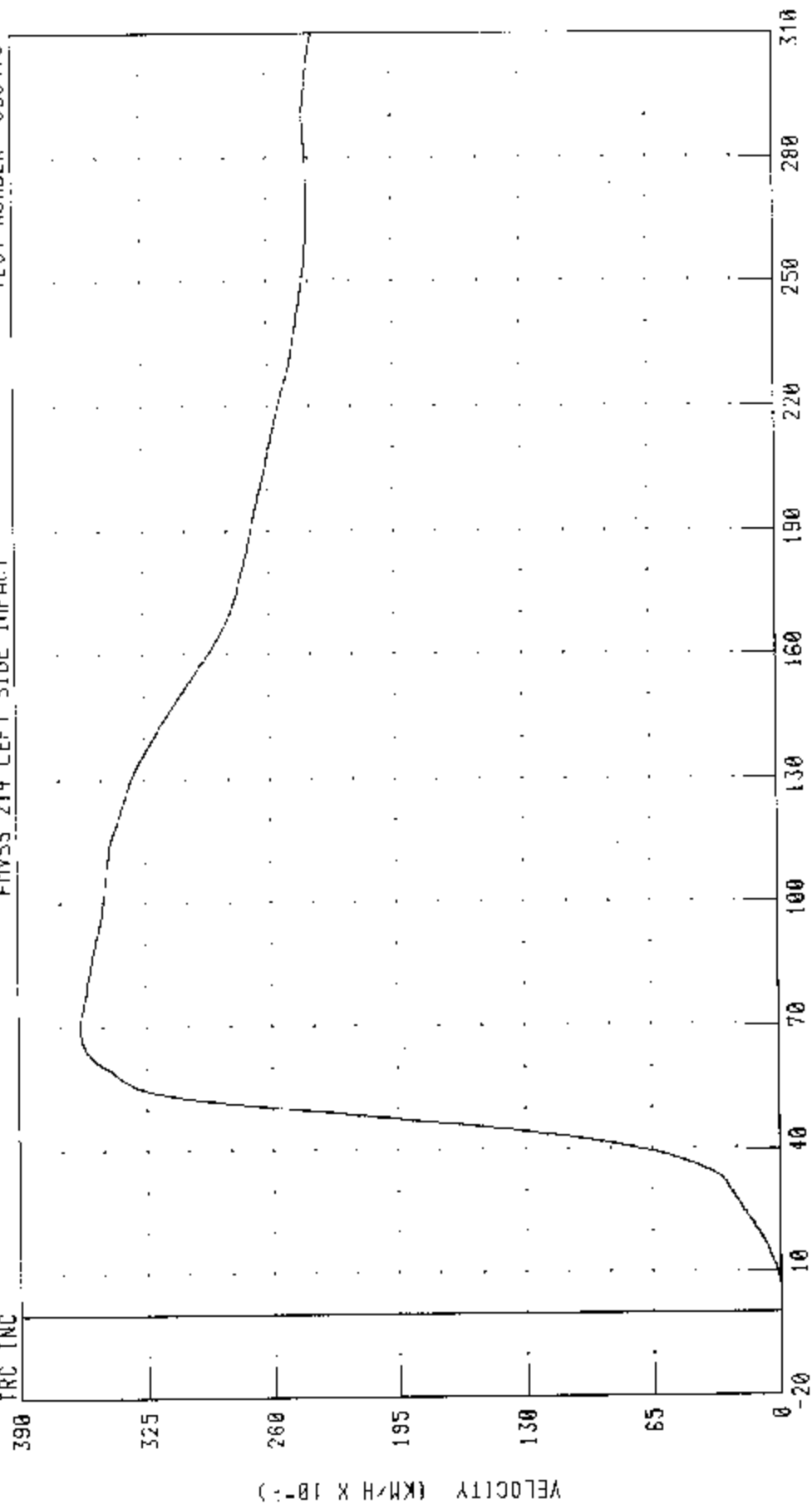
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER PELVIS Y-AXIS REQUINANT VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



TIME (MS)

PEAK DATA 35.84 KM/H @ 66.70 MS; 0.00 KM/H @ 0.00 MS

CHANNEL PEVVJ FILTER: CH. CLASS 180

Test Vehicle Instrumentation Plots

Acceleration Data - Filter Class 60

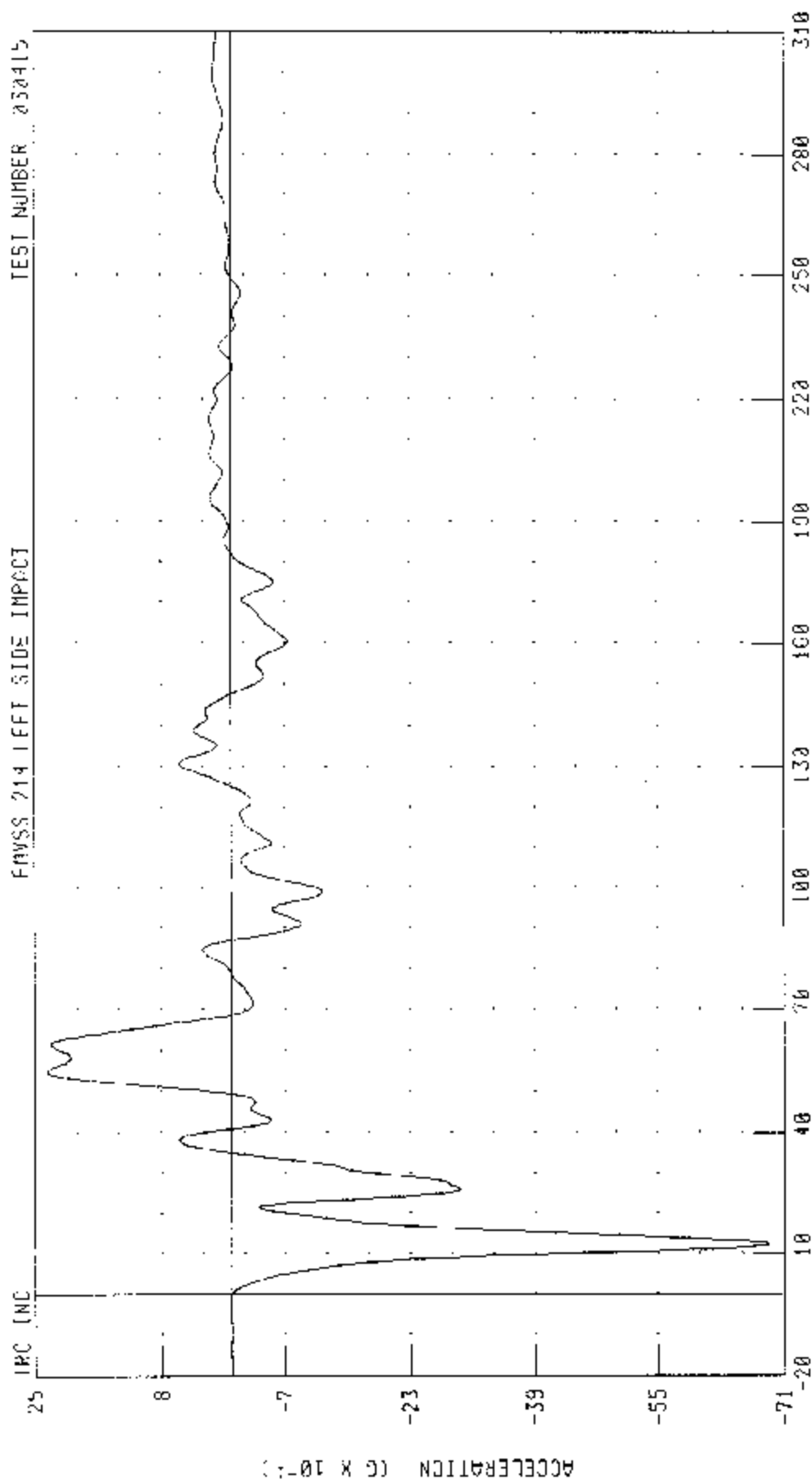
Integration Data - Filter Class 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING, PERFORMABLE 36-PIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SILL AT FRONT SEAT X AXIS ACCELERATION

TEST NUMBER 030415

FAVSS 214 LEFT SIDE IMPACT



CHANNEL: RFSX01 FILTER CH. CLASS 60

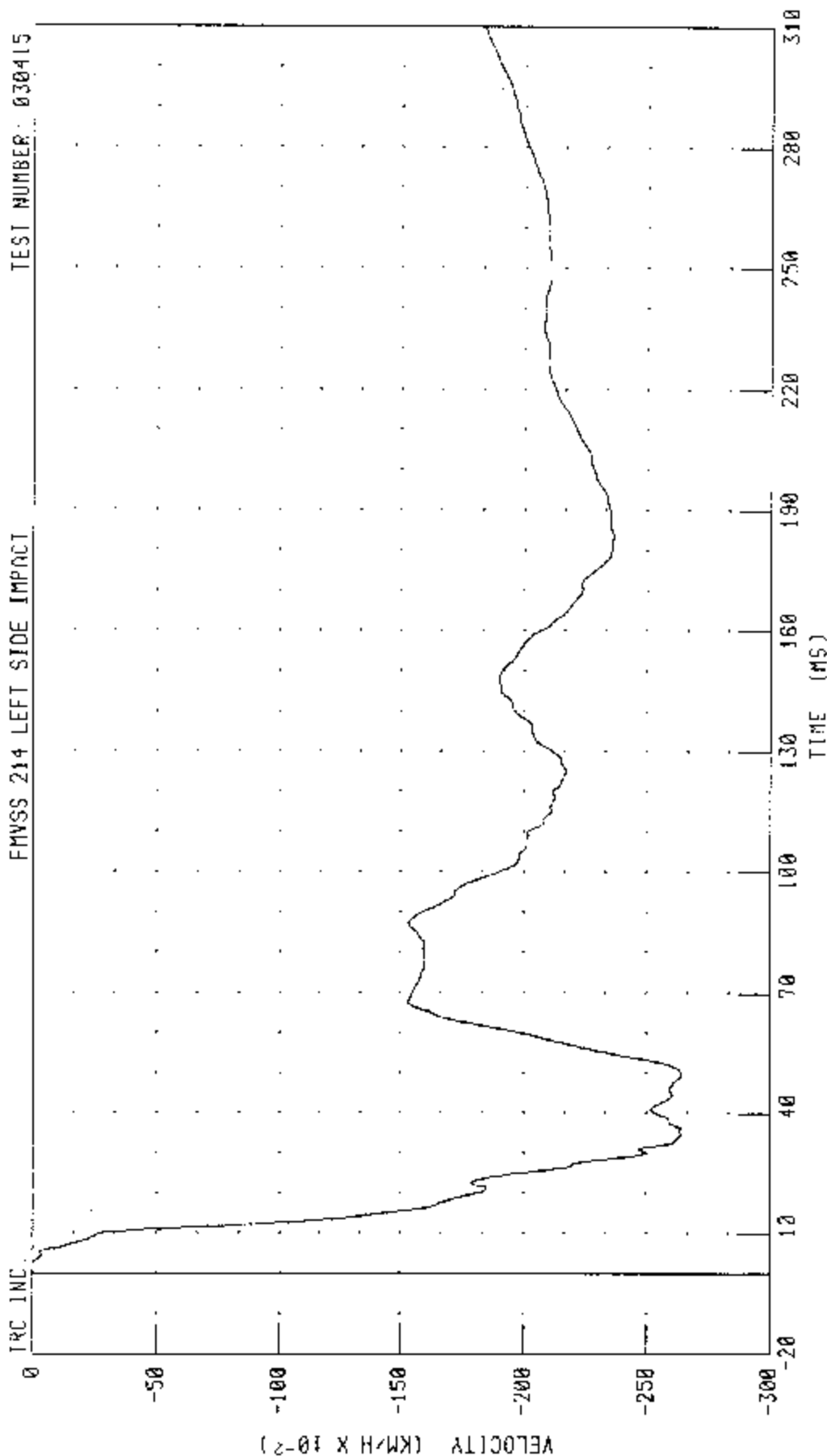
PEAK DATA: 2.33 G @ 54.88 MS, -6.89 G @ 12.16 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SILL AT FRONT SEAT X AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415



CHANNEL: RFSXV1 FILTER: CH CLASS 180

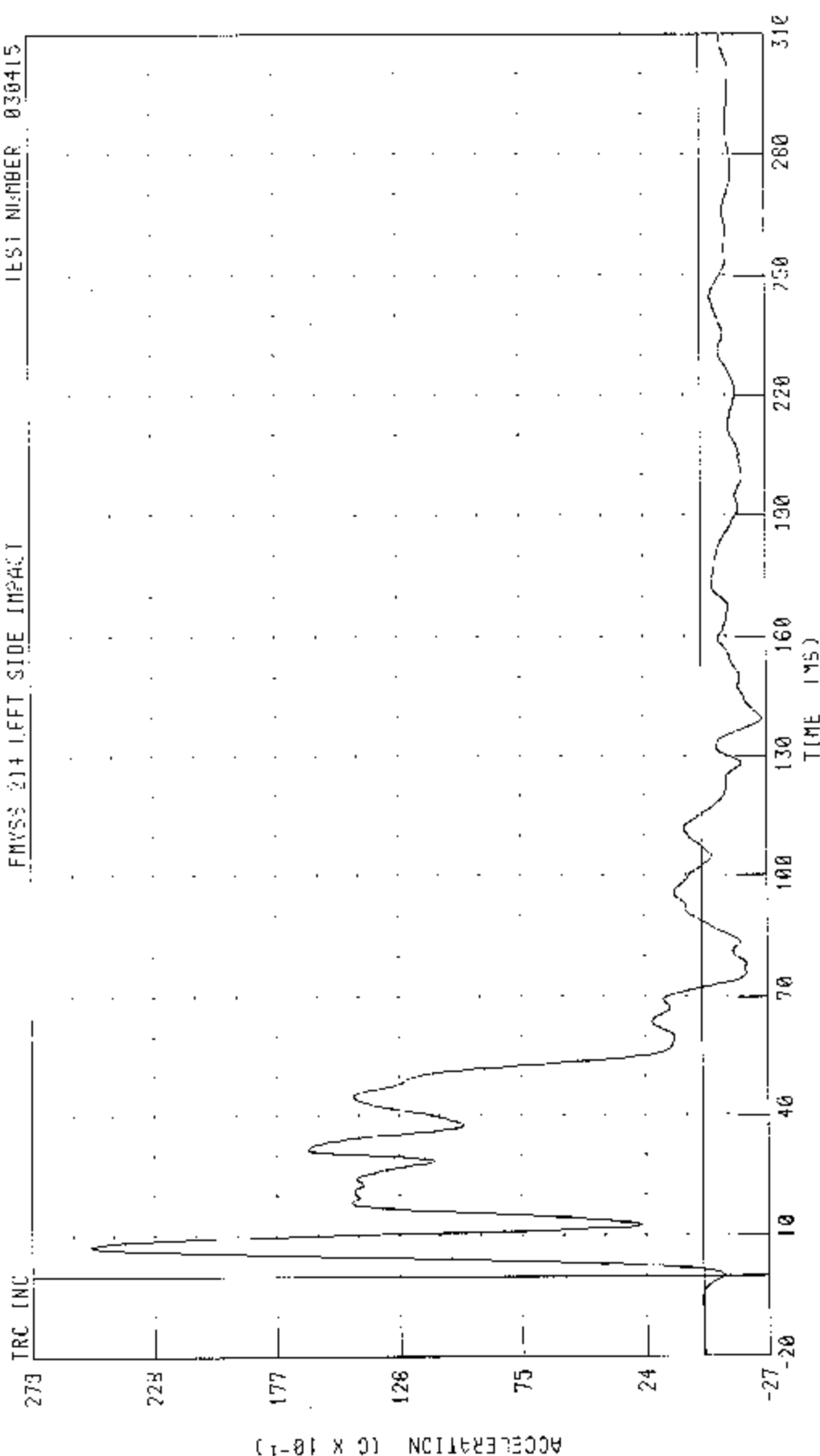
PEAK DATA: 0.00 KM/H @ 0.00 MS; -2.64 KM/H @ 34.72 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBURBU LEGACY

RIGHT SIDE SILL AT FRONT SEAT Y AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 204 LEFT SIDE IMPACT

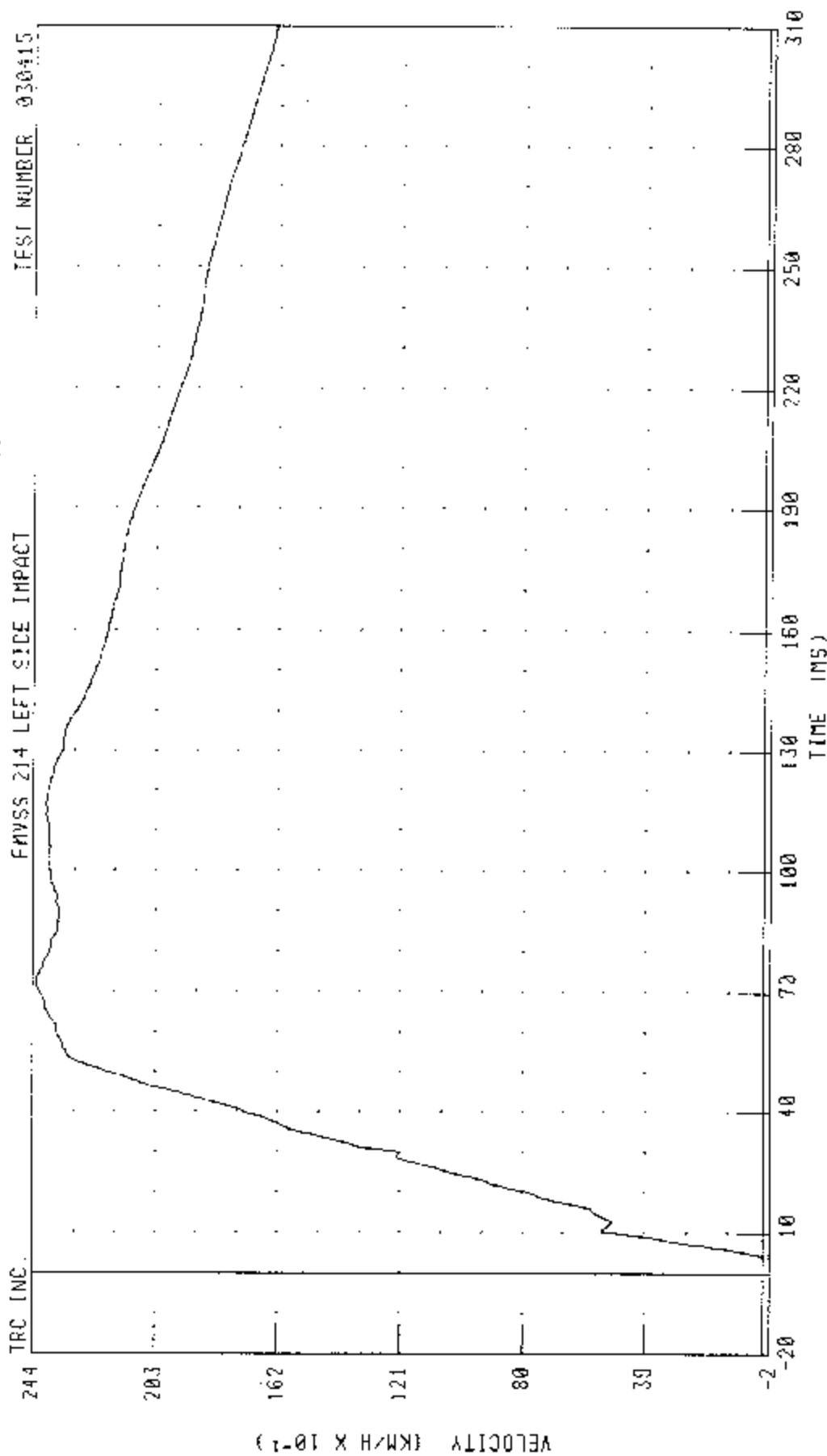


PEAK DATA 25.47 G @ 744 MS, 2.50 G @ 139.68 MS

CHANNEL: RFSYGI FILTER: CH. CLASS 60

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SEAT AT FRONT SEAT V-AXIS VELOCITY



CHANNEL: RFSYV1

FILTER: CH CLASS 180

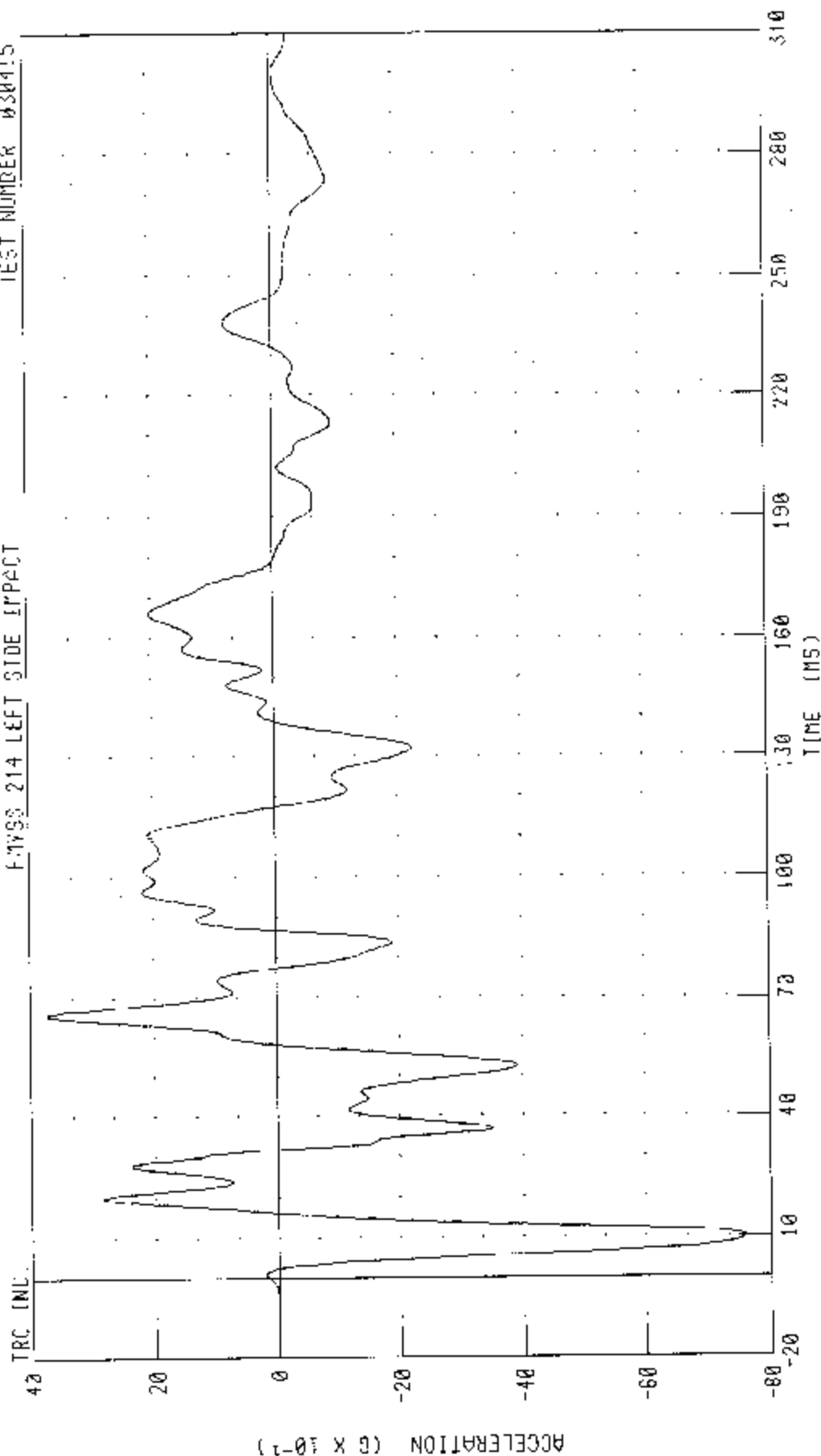
PEAK UP1A: 24.25 KM/H @ 72.96 MS, -2.01 KM/H @ 3.20 MS

55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2000'S SUBARU LFCACY

RIGHT SIDE SII... AT FRONT SEAT Z-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



PEAK DATA: 3 72 6 0 65.84 MS, -7 59 0 0 3 32 MS

CHANNEL: RFS/G1 FILTER: CH CLASS 60

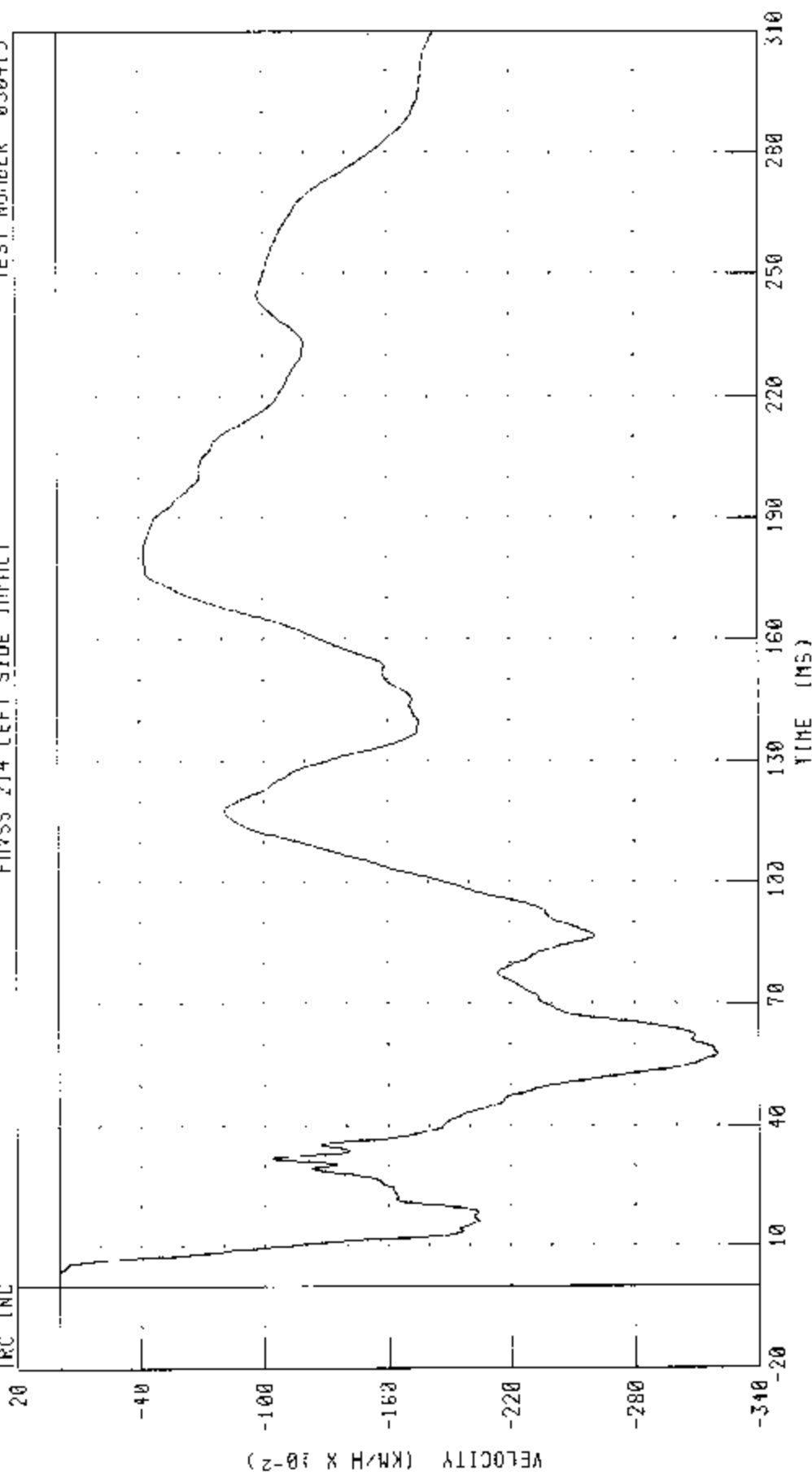
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SILL AT FRONT SEAT 7-AXIS VELOCITY

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



CHANNEL: RFSZV1

FILTER: CH CLASS 180

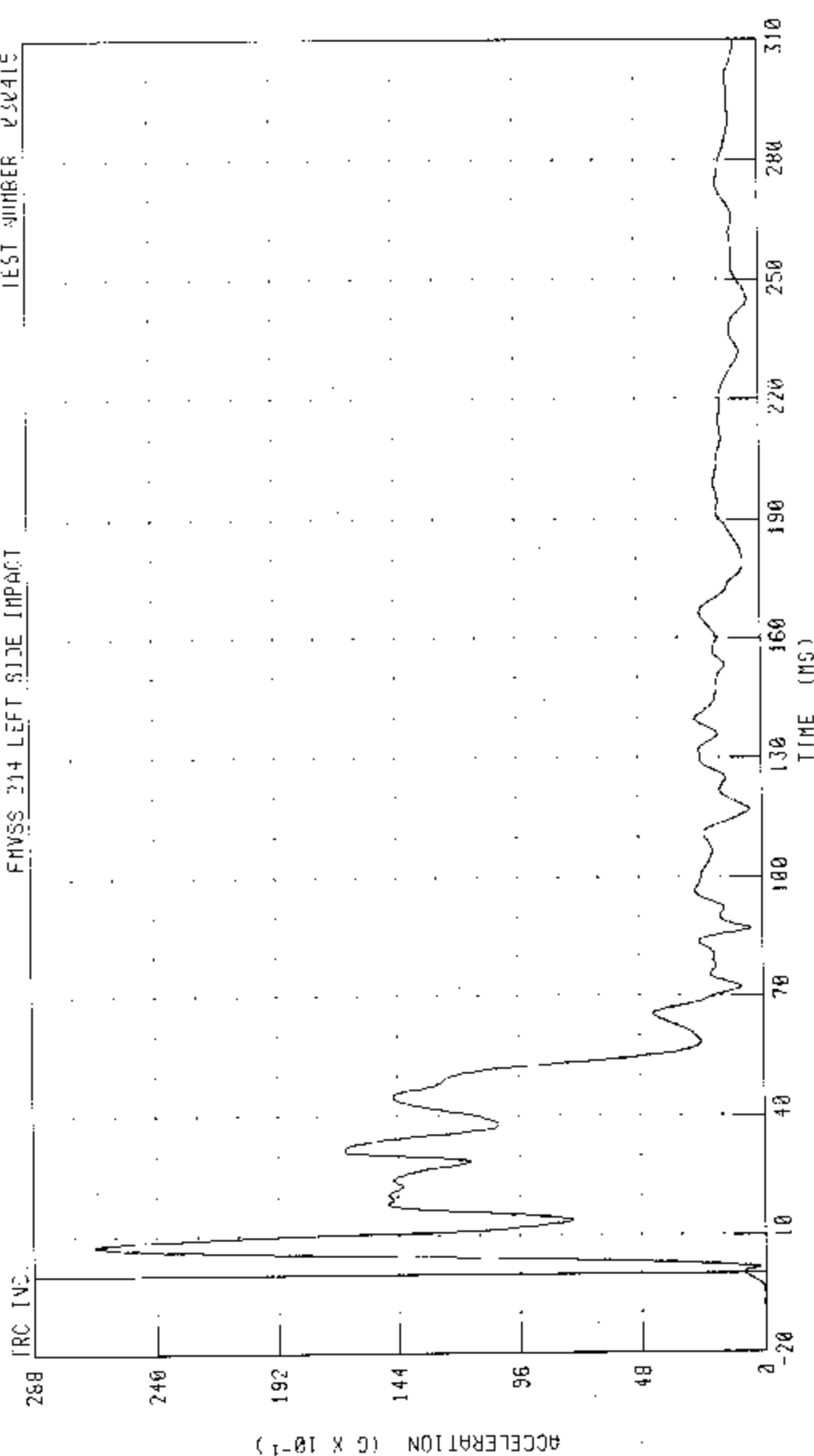
PEAK DATA: 0.00 KM/H @ 2.80 MS, -3.20 KM/H @ 57.60 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

TEST NUMBER 230415

FMVSS 214 LEFT SIDE IMPACT



CHANNEL: HFSR01 FILTER: CH CLASS 60

PEAK DATA 20.40 0 0 7 52 MS, 0.01 0 0 -18 00 MS

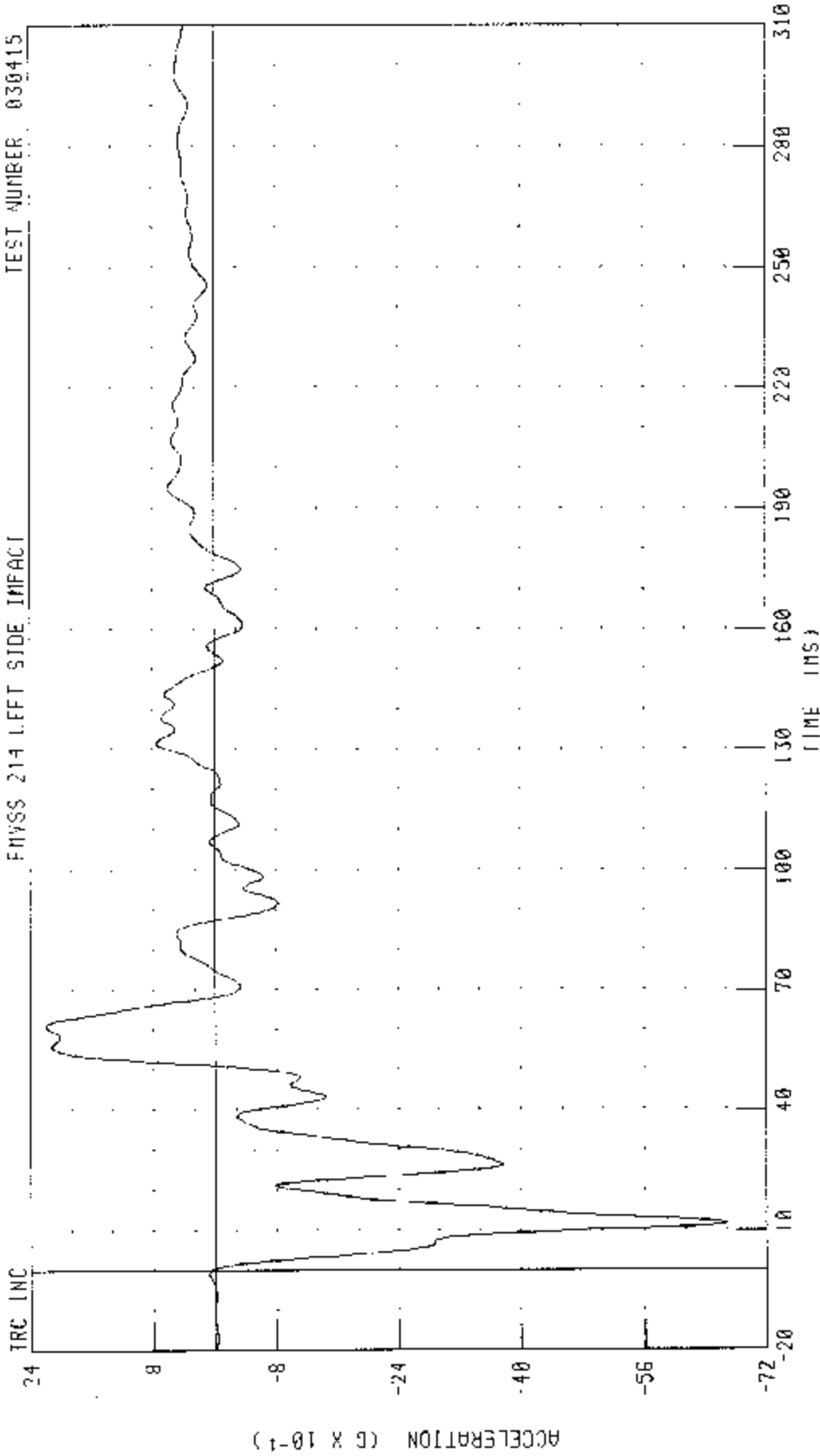
55-28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SEAT AT REAR SEAT X-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



PEAK DATA: 2.21 G @ 60.96 MS, -6.68 G @ 11.84 MS

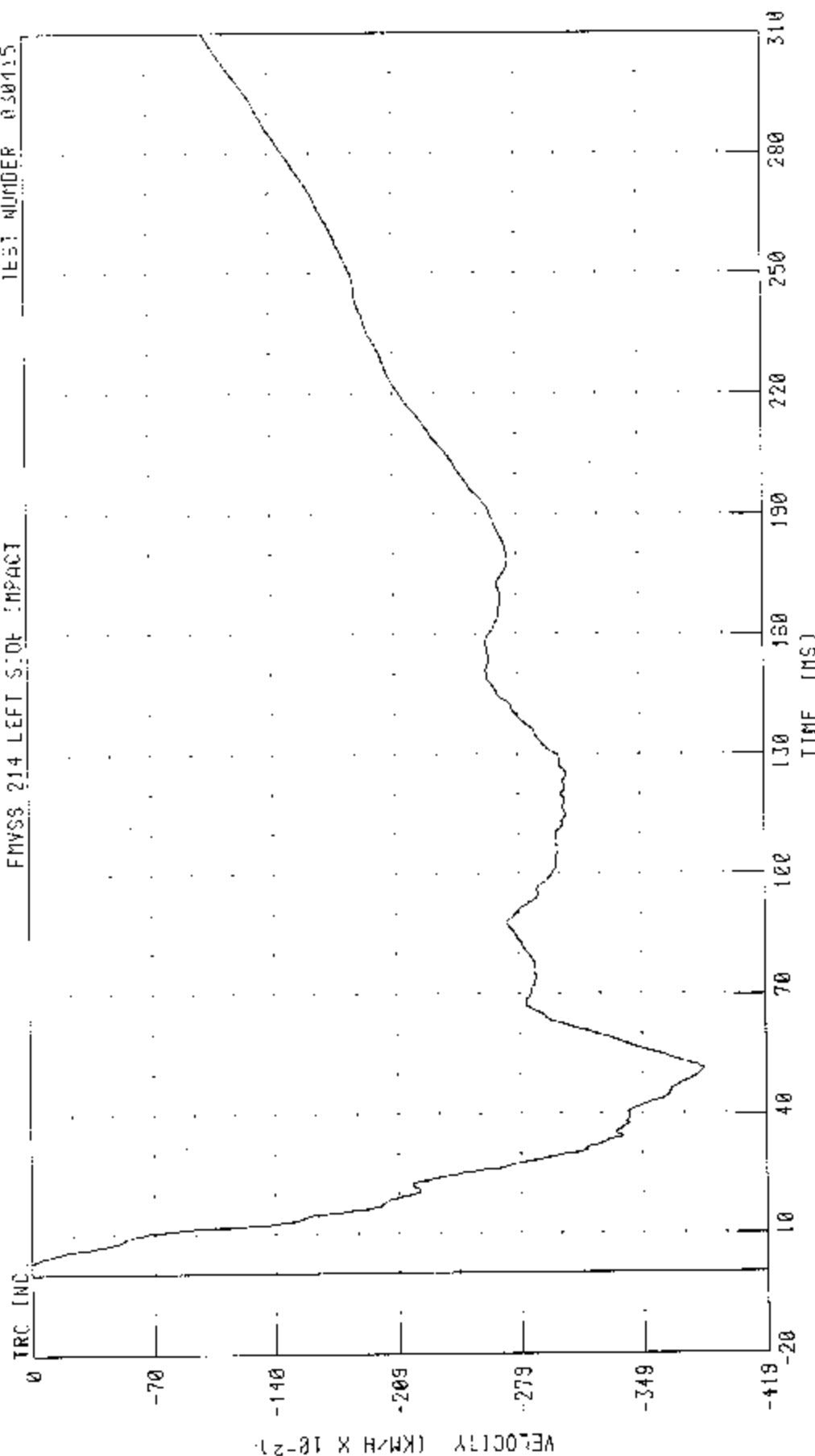
CHANNEL RRSXC1 FILTER CH CLASS 60

55/28 <PH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2000 SUBARU LEGACY

RIGHT SIDE SILL AT REAR SEAT X-AXIS VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

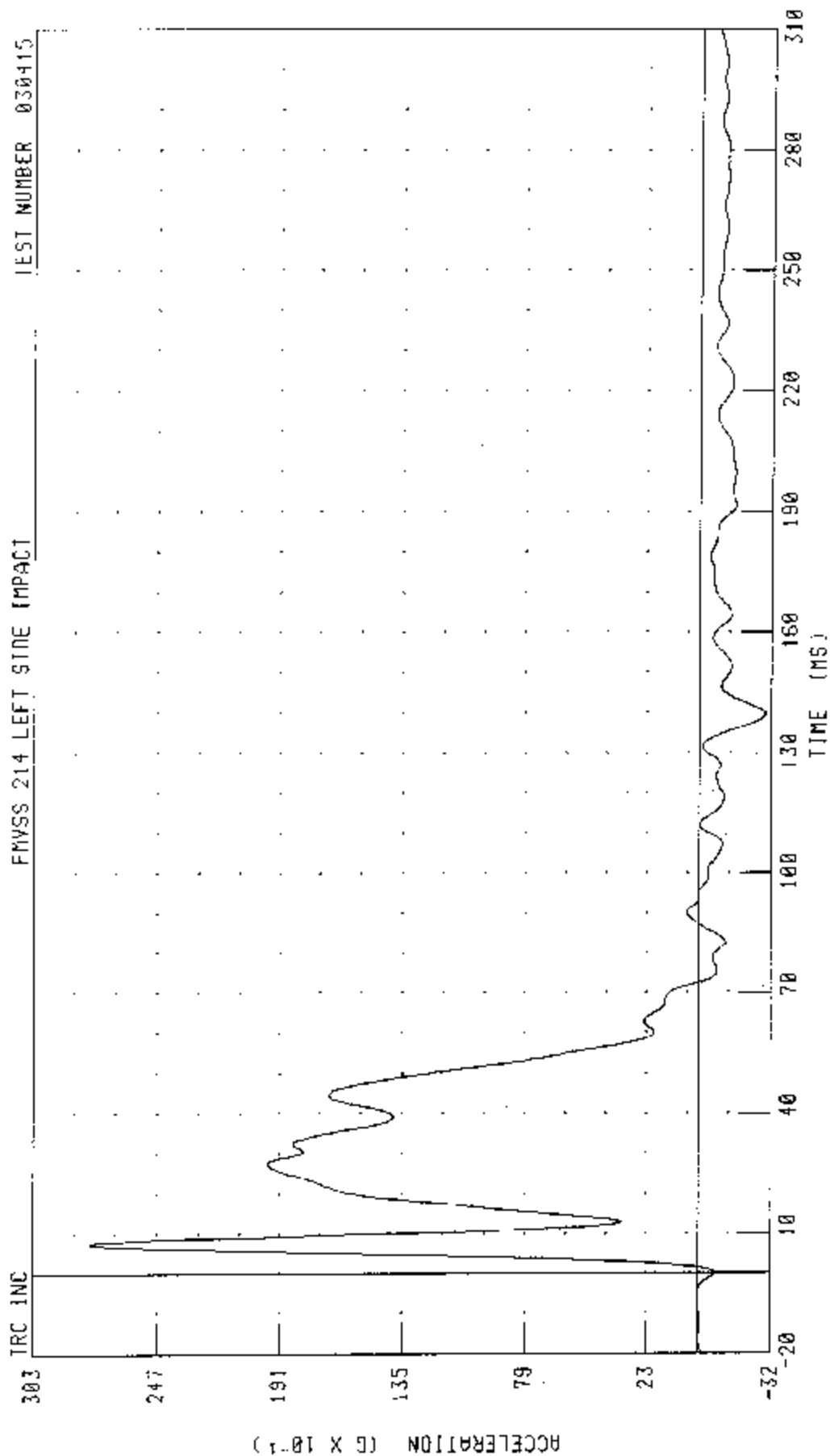


PEAK DATA: 0 00 KM/H @ 2 08 MS, 3 85 KM/H @ 51 28 MS

CHANNEL: RRSXV1 FILTER: CH. CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION



CHANNEL: RRSYG1 FILTER: CH. CLASS 60

PEAK DATA: 27.86 G @ 7.52 MS, -2.91 G @ 139.60 MS

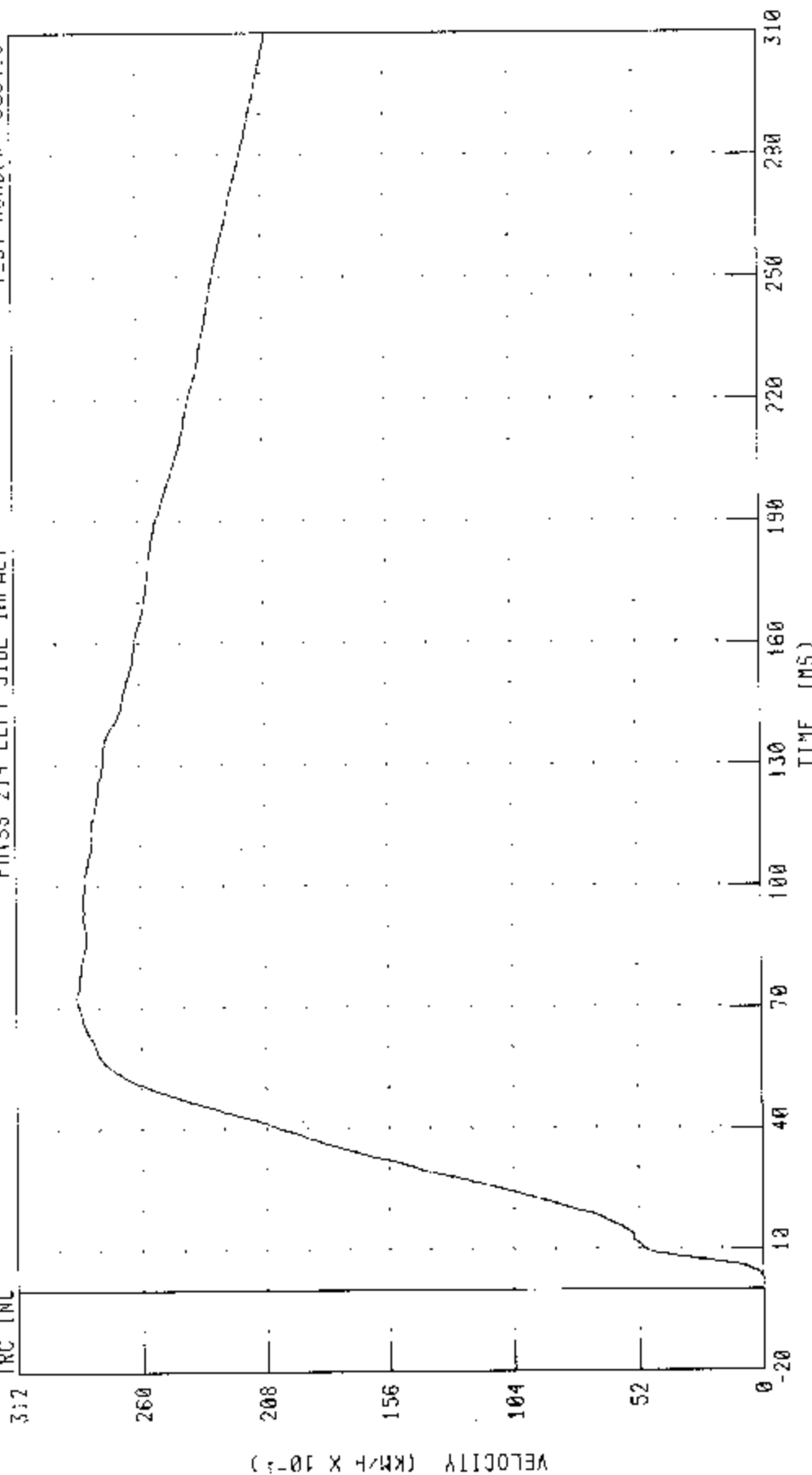
55/20 KPH 50 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE SILL AT REAR SEAT Y-AXIS VELOCITY

TEST NUMBER 030415

FNVS 214 LEFT SIDE IMPACT

TRC INC



TIME (MS)

PEAK DATA: 28 66 KM/H @ 72 56 MS; 0 00 KM/H @ 0.00 MS

CHANNEL RRSYV1 FILTER CH. CLASS 180

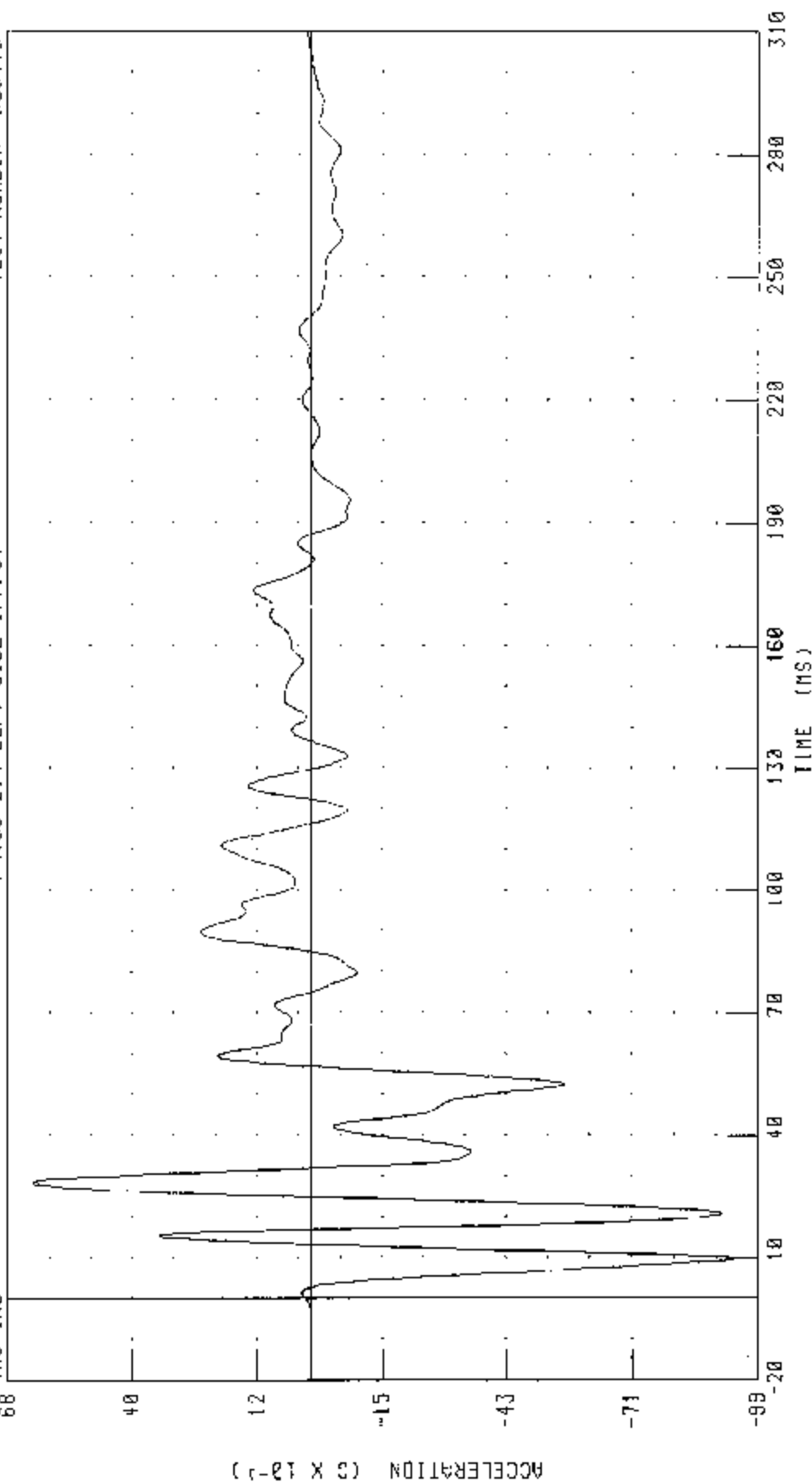
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING OFFSHORE BARRIER) INTO LEFT SIDE OF TRAX SURBAR - FGACY

RIGHT SIDE SILL AT REAR SEAT Z-AXIS ACCELERATION

PHYS 214 LEFT SIDE IMPACT

TEST NUMBER R30415

TRC INC



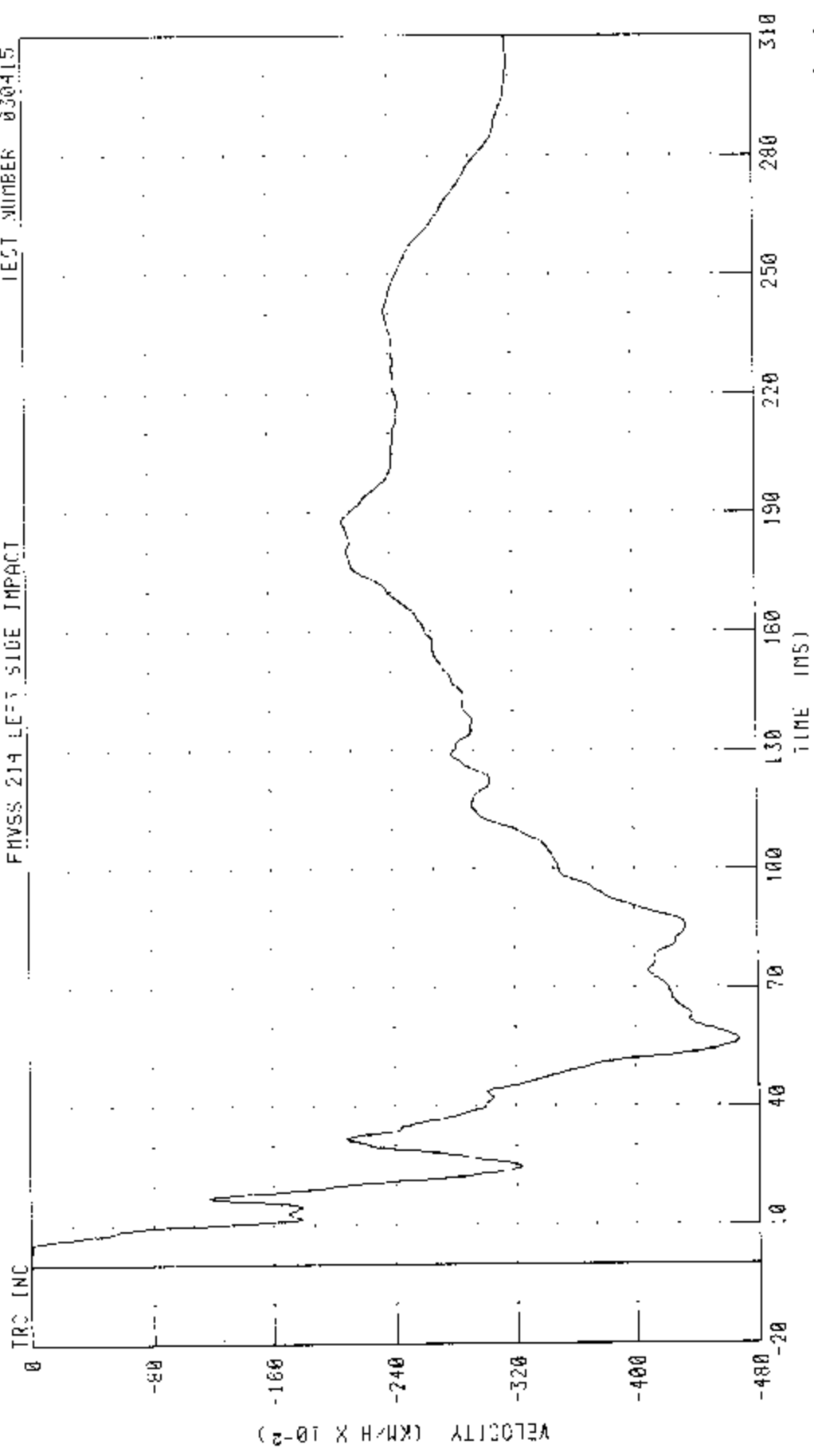
CHANNEL RRSZG1 FILTER CH CLASS 60

PEAK DATA 6 25 0 0 28 10 MS, -9 49 0 0 70 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT SIDE S11 AT REAR SEAT Z AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



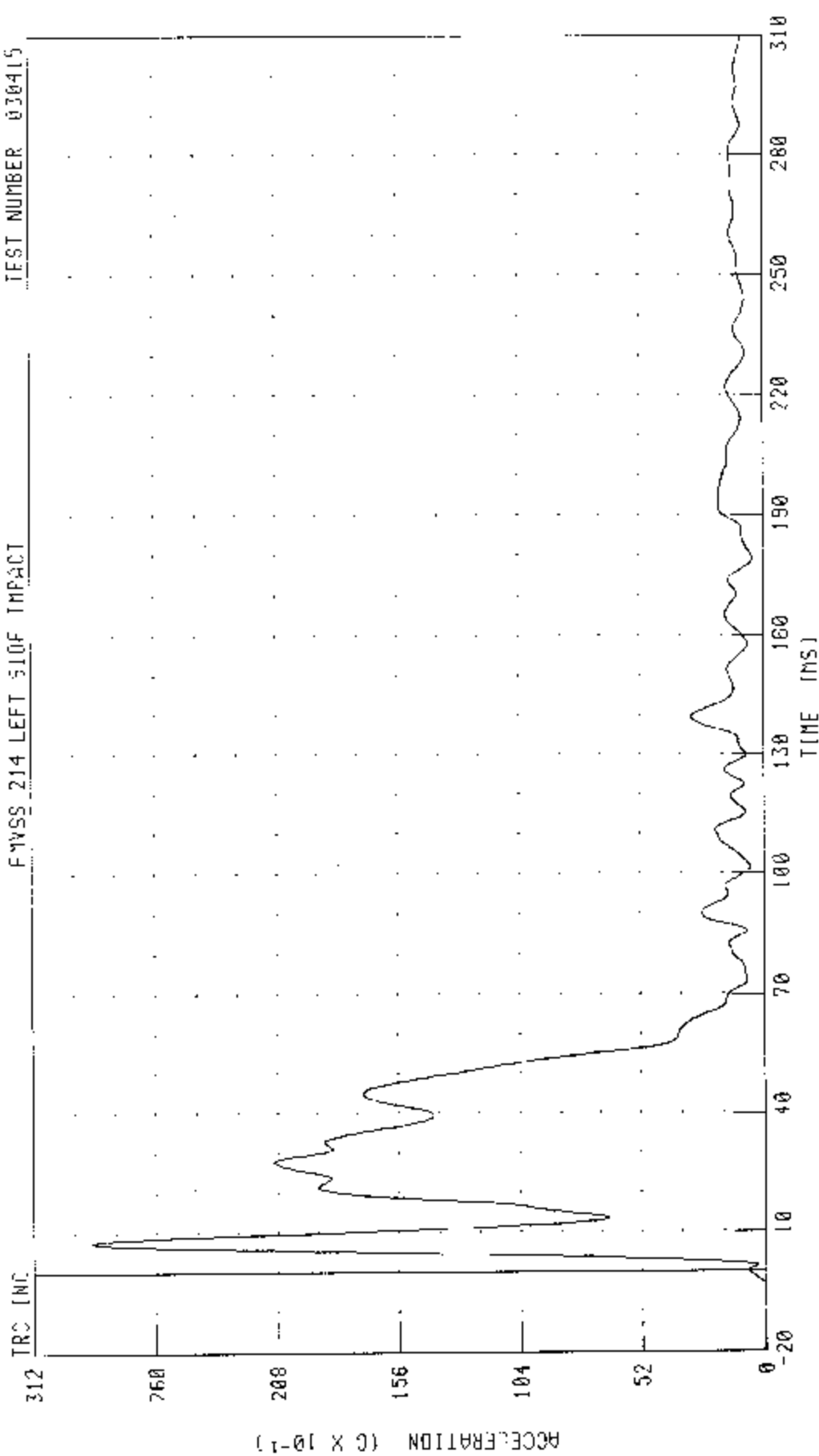
CHANNEL: RRSZV1 FILTER: CH CLASS 180 PEAK DATA: 0.00 KPH/H @ 7.00 MS, -4.67 KPH/H @ 56.00 MS

55/20 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU IMPACT

RIGHT SIDE SHOCK AT REAR SEAT RESIDENT ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



PEAK DATA: 28 76 G @ 7 60 MS, 0.02 G @ -9 28 MS

CHANNEL: HRSR01 FILTER: CH. CLASS 60

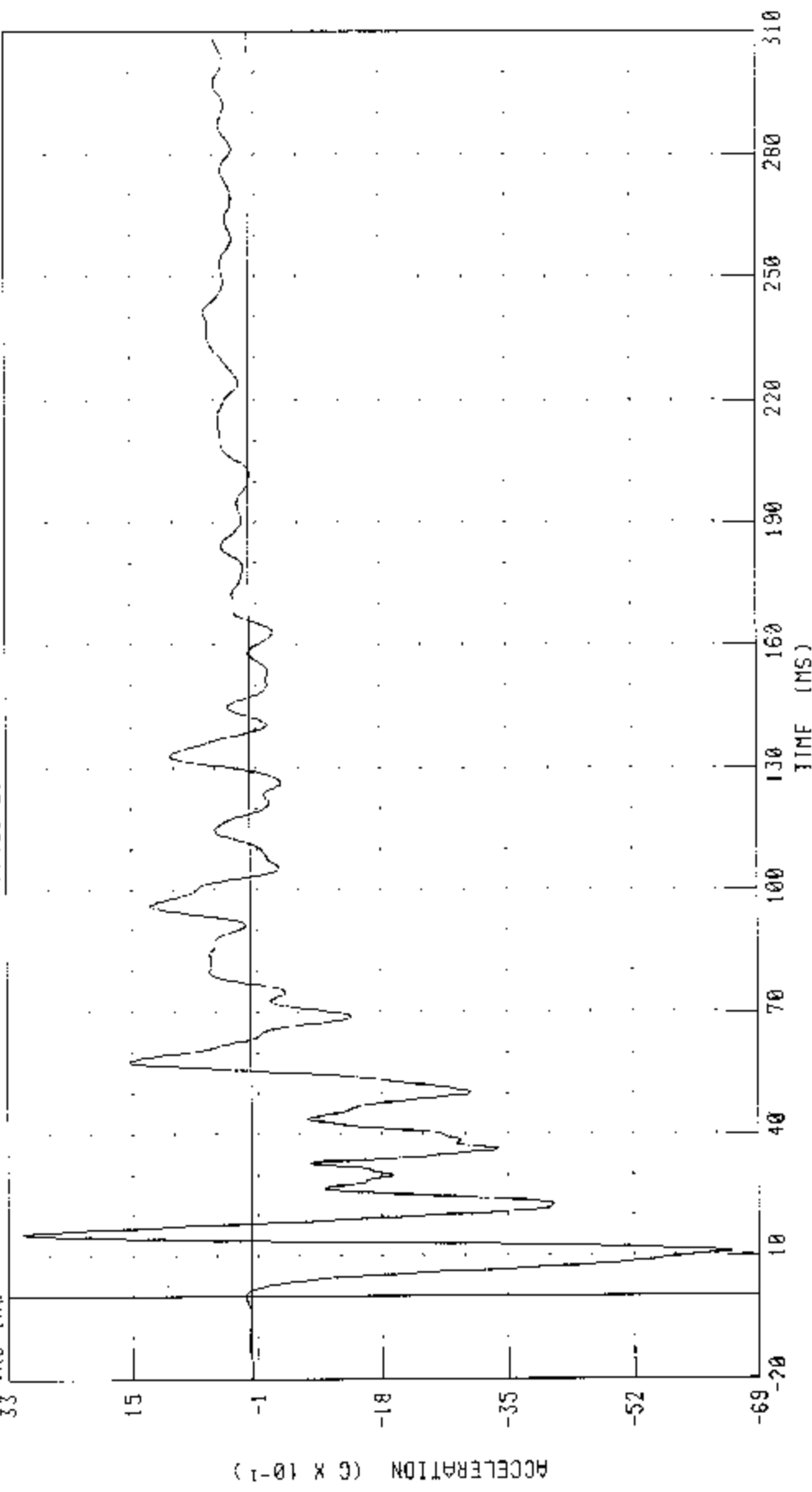
55/20 MPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

REAR FLOORPAN ABOVE AXLE X-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

IRC INC



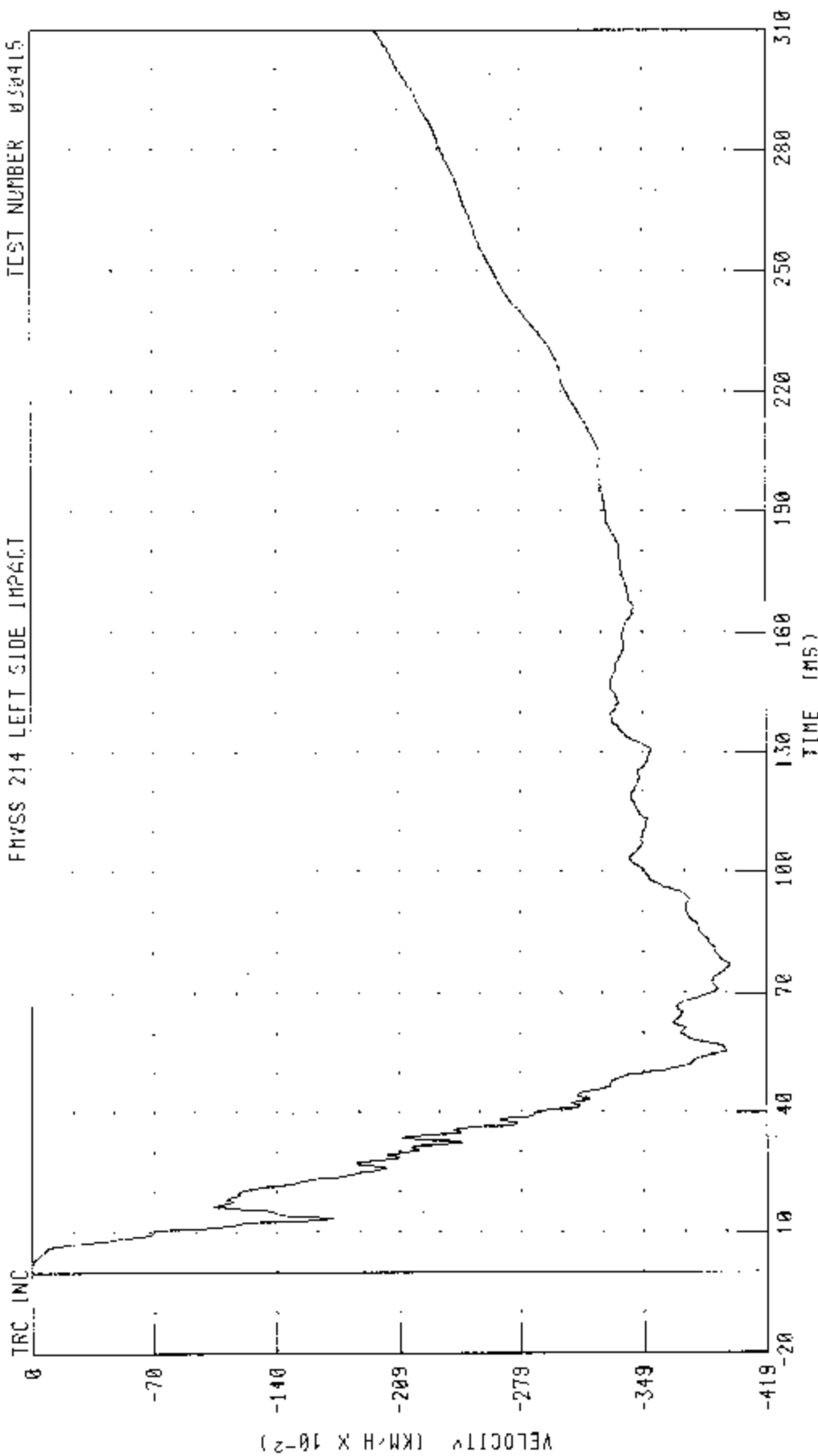
CHANNEL RDXG1 FILTER: CH CLASS 60

PEAK DATA: 3 09 0 0 15 52 MS, -6 55 G @ 10 88 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

REAR FLOORPAN ABOVE AXLE X-AXIS VELOCITY

PHYSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



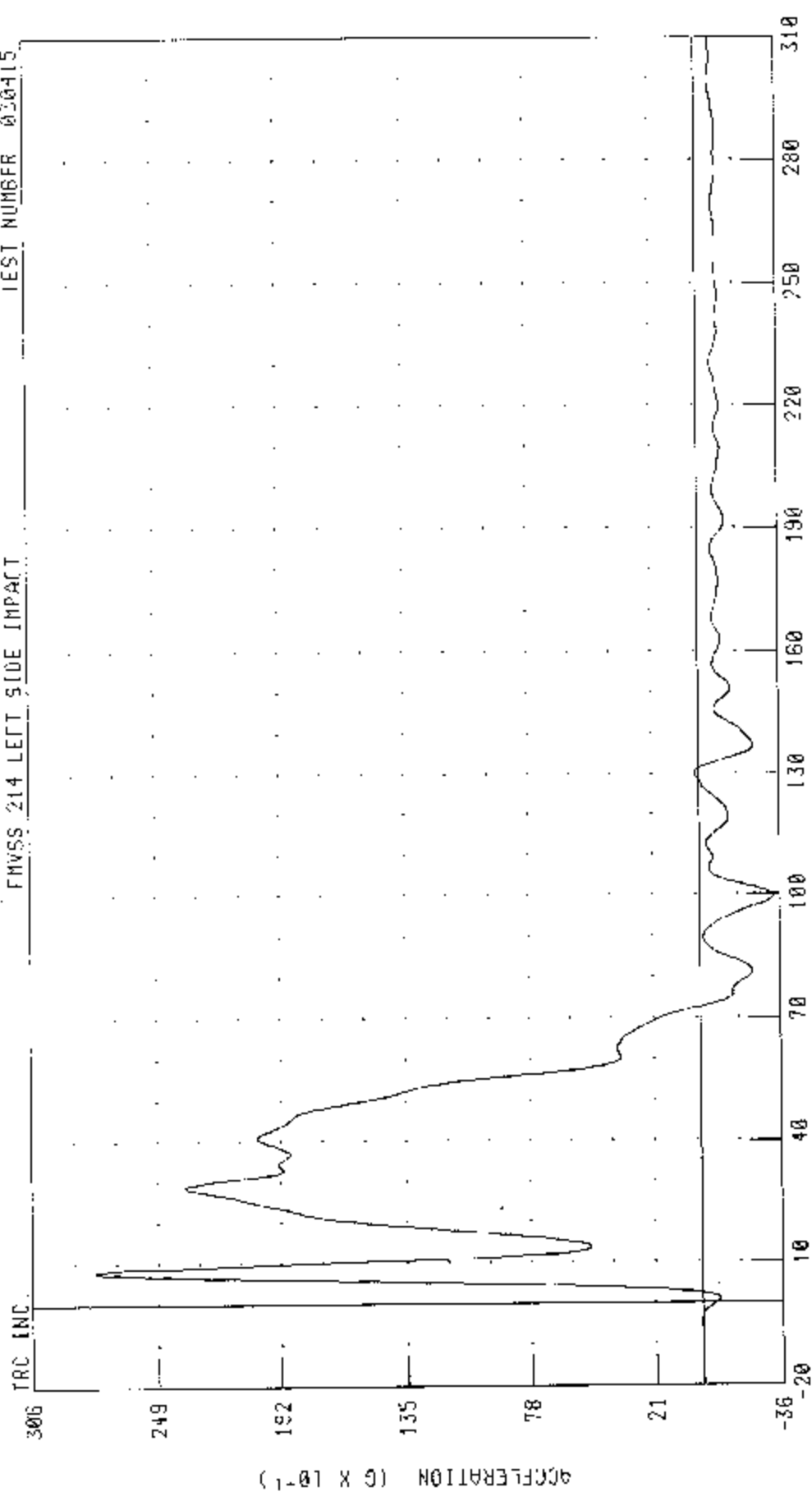
PEAK DATA: 0 00 KM/H @ 28 MS; -3 99 KM/H @ 77 04 MS

CHANNEL: RDKXXV1 FILTER: CH. CLASS 130

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 200X SUBARU LEGACY

REAR FLOORPAN ABOVE AXLE Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



ACCELERATION (G X 10⁻¹)

TIME (MS)

PEAK DATA 27.80 0 0 7 84 MS, -3 33 0 0 99.76 MS

CHANNEL: R0KYG1 FILTER: CH CLASS 60

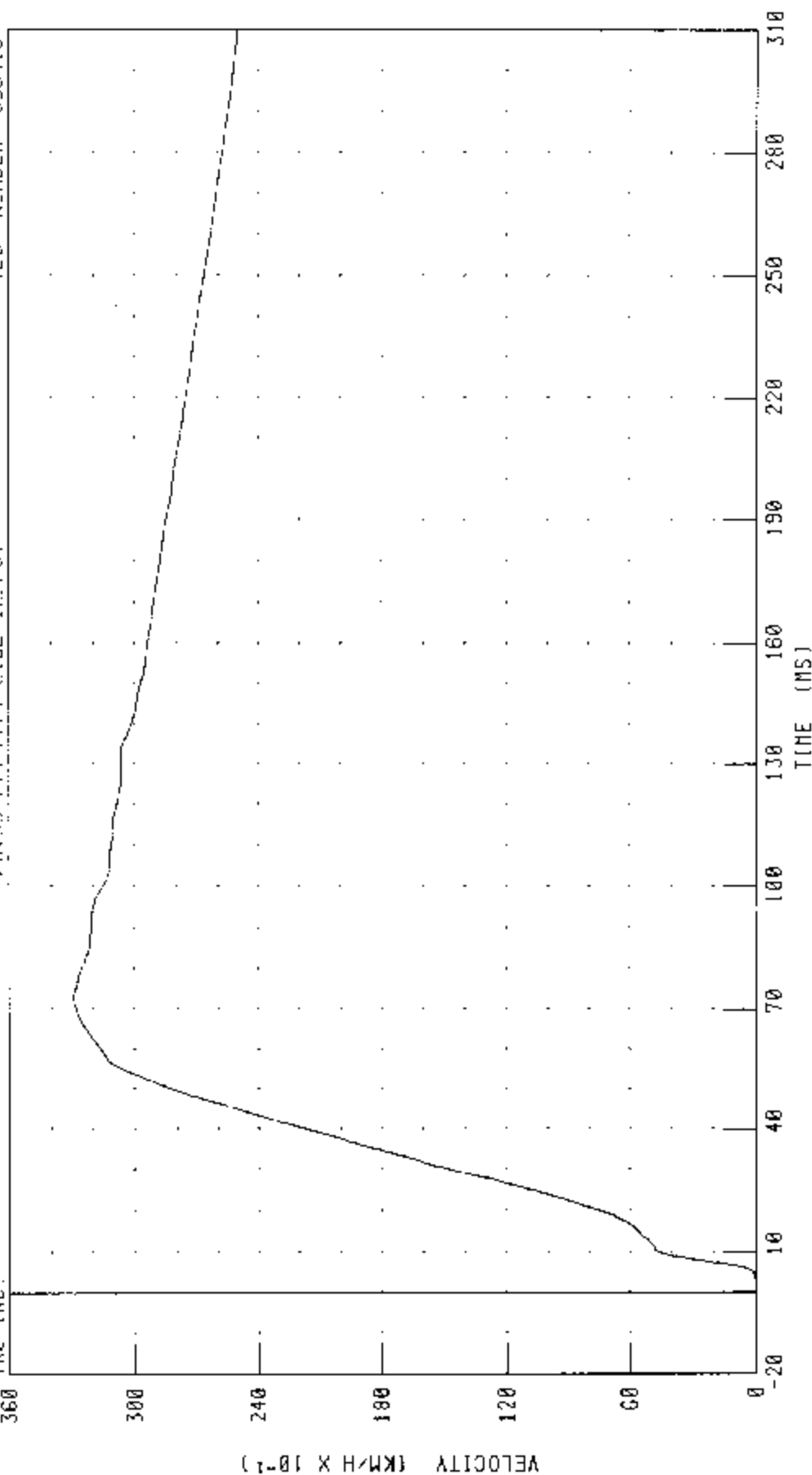
55/28 XPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBORDINATE

REAR FLOORPAN ABOVE AXLE Y AXIS VELOCITY

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: ROKYV1 FILTER: CH CLASS 180

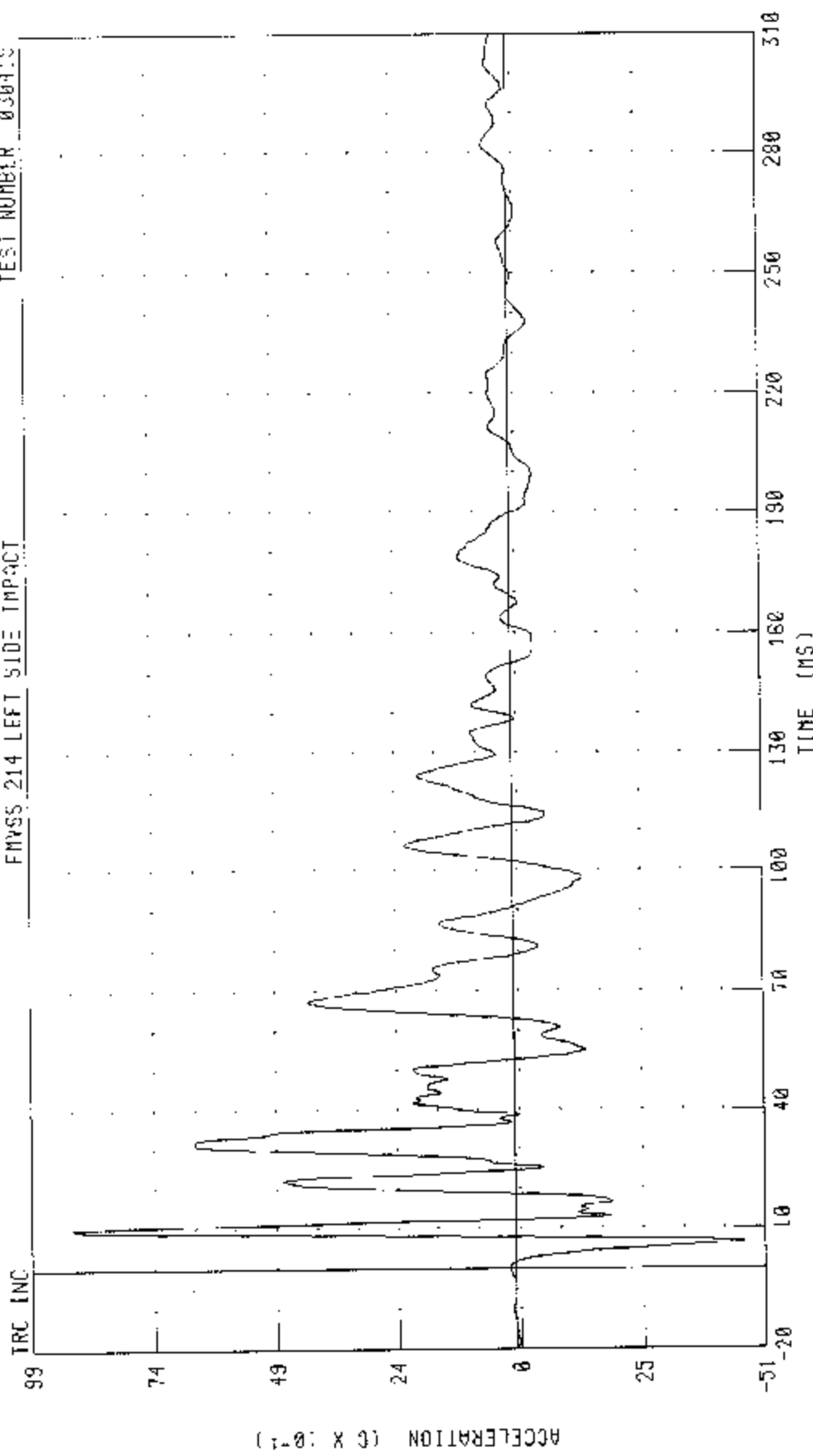
PEAK DATA 32 94 KM/H @ 72.88 MS; 0.00 KM/H @ 0 16 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 1003 SUBARU LEGACY

REAR FLUOROPAN ABOVE AXLE 2-AXIS ACCELERATION

TEST NUMBER 030415

FMYSS 214 LEFT SIDE IMPACT

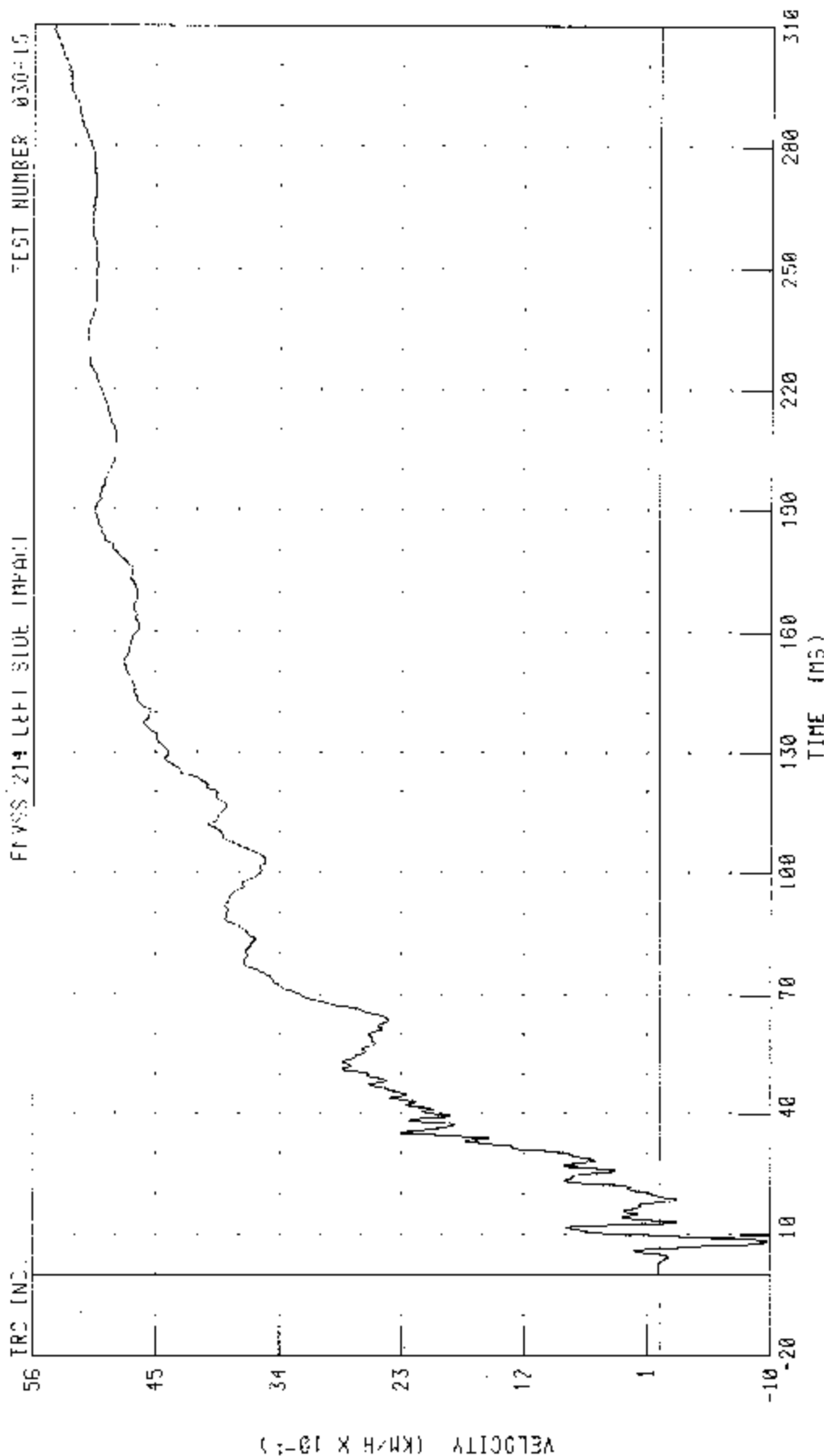


PEAK DATA 9 06 0 9 76 MS, -4.66 G 0 5 48 MS

CHANNEL RDKZG1 FILTER: CF CLASS 60

ACCELERATION (G X 10^-1)

55/28 KP-H 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY
 REAR FLOORPAN ABOVE AXLE Z-AXIS VELOCITY



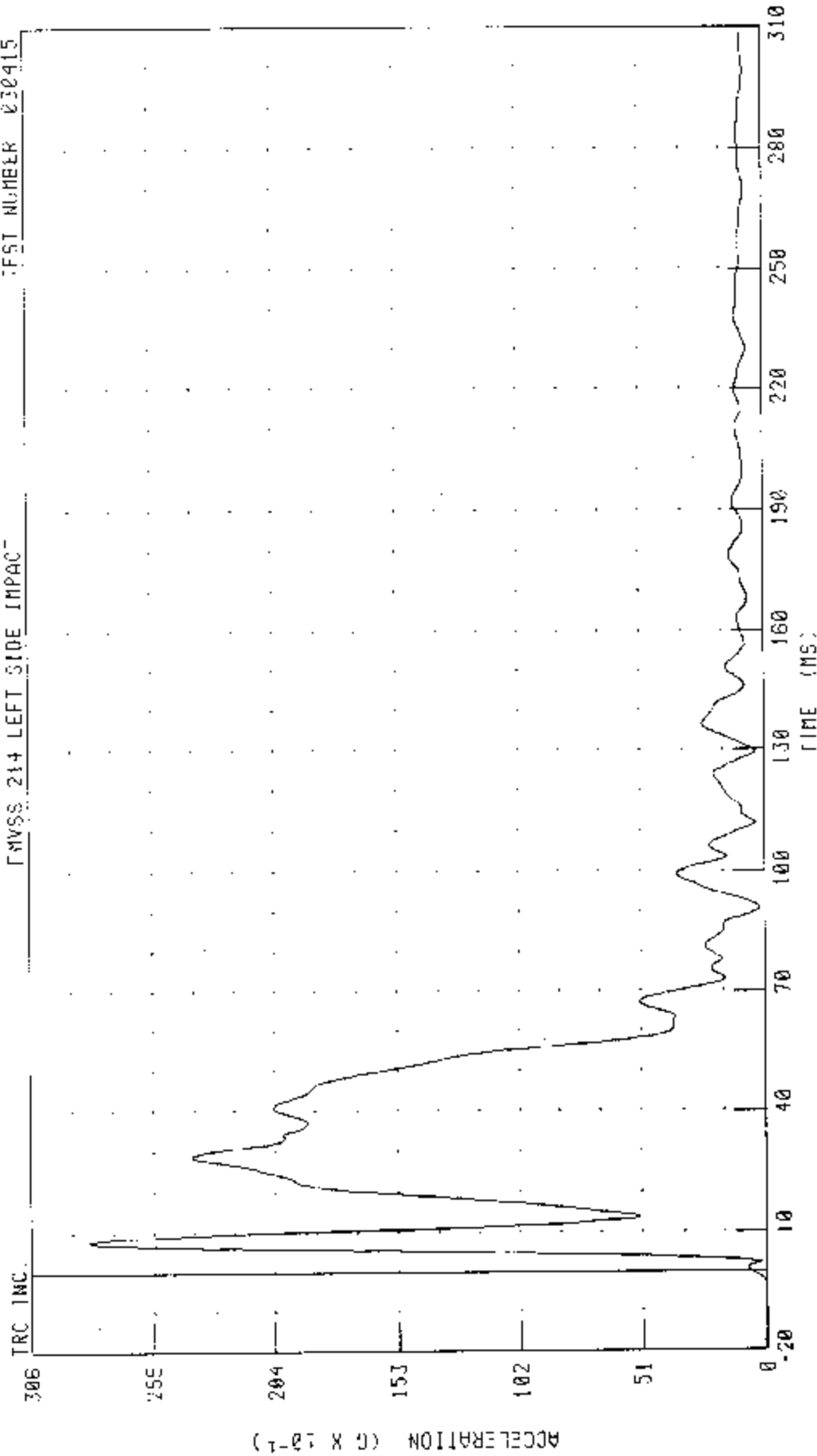
PEAK DATA 5.41 KM/H @ 300.96 MS; -0.96 KM/H @ 8.24 MS

CHANNEL: ROKZY1 FILTER: CH. CLASS 180

55/28 KPH 30 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU IMPACT

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



PEAK DATA: 28 20 0 0 7 92 MS, 0 0 0 -14 64 MS

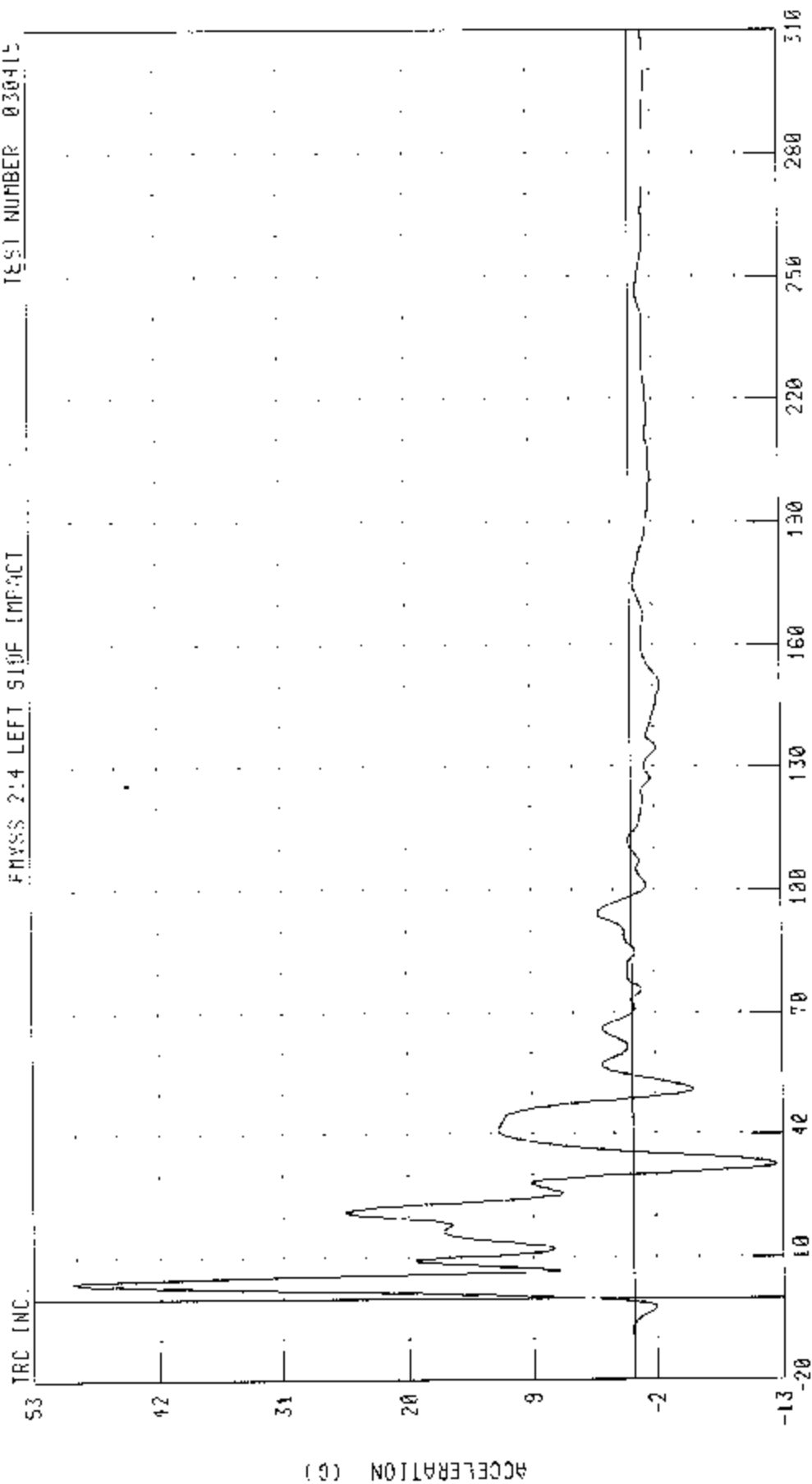
CHANNEL ROKRC1 FILTER: CH CLASS 60

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT SIDE SII AT FRONT SEAT Y-AXIS ACCELERATION

TEST NUMBER 030415

PMVSS 214 LEFT SIDE IMPACT



TIME (MS)

PEAK DATA 49.64 G @ 3.92 MS, 12.41 G @ 32.64 MS

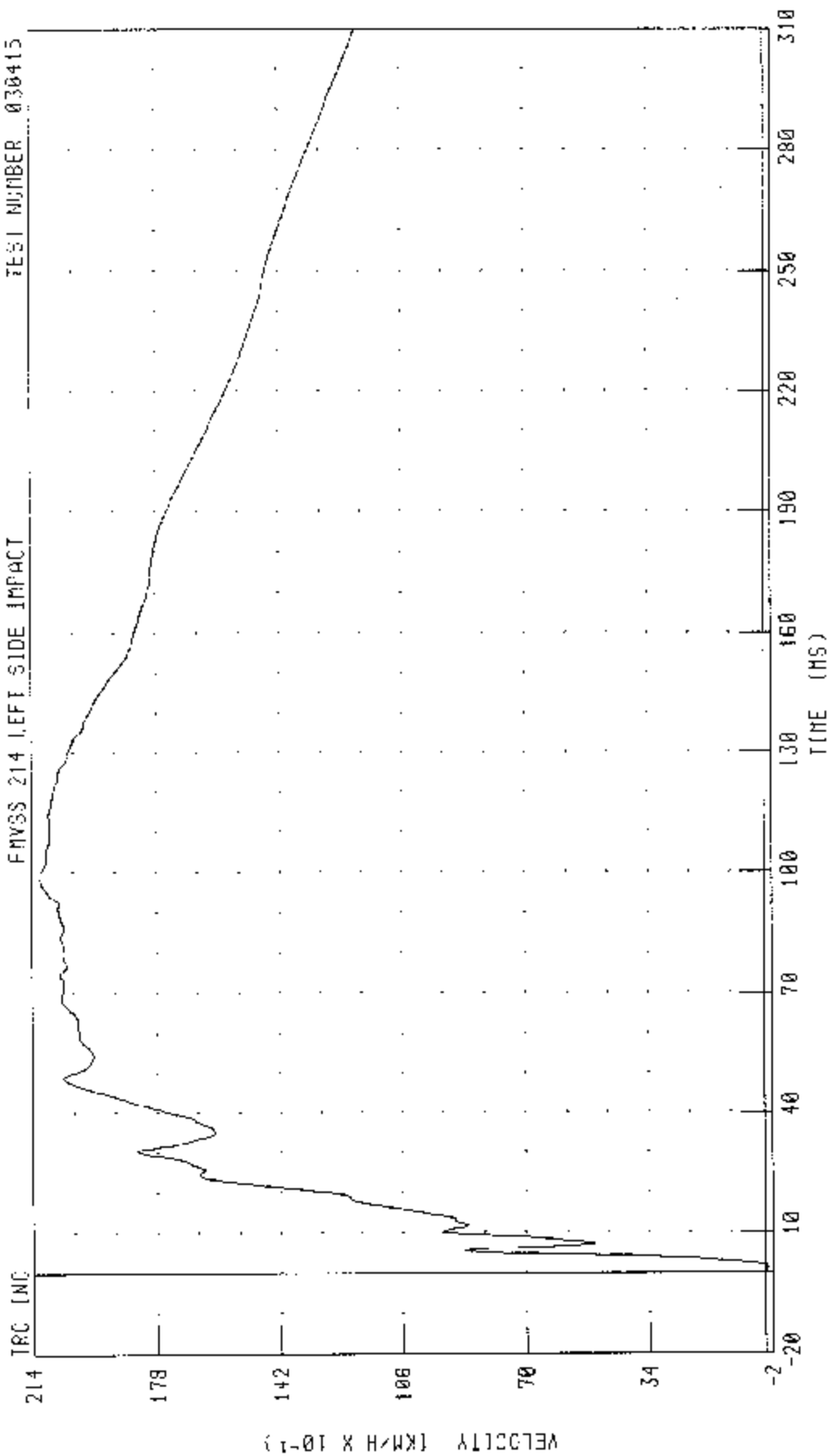
CHANNEL: LFSYCI FILTER CH. CLASS 60

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT SIDE SII: W FRONT SEAT Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



TIME (MS)

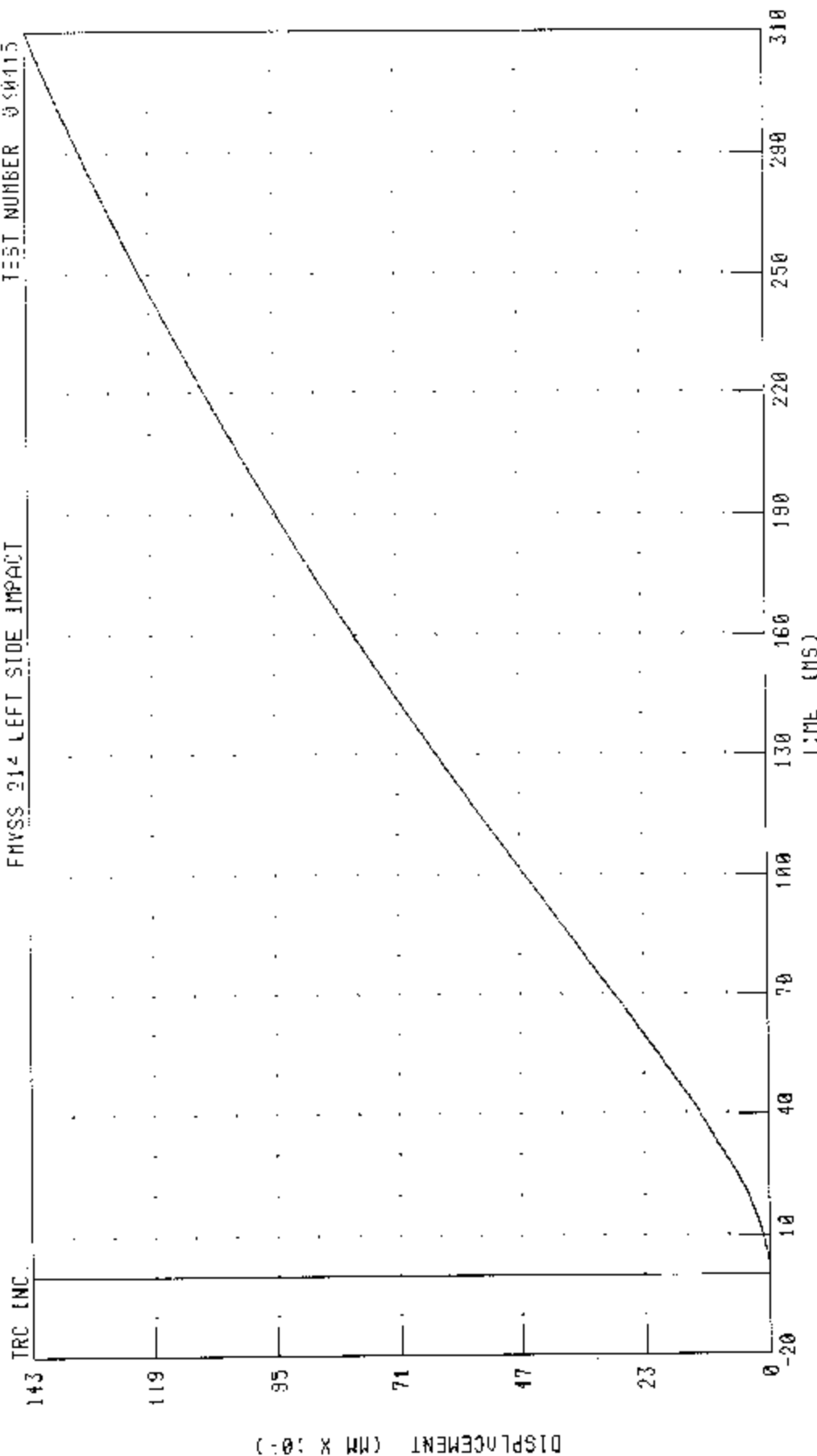
PEAK DATA: 21.15 KM/H @ 98.48 MS, -0.04 KM/H @ 1.26 MS

CHANNEL: LFSYV1 FILTER: CH. CLASS: 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT SIDE STILL AT FRONT SENT Y-AXIS DISPLACEMENT

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



CHANNEL: LFSVD1 FILTER: CH. CLASS 100 PEAK DATA 1438 96 MM @ 310 00 MS, -0.01 MM @ 1 76 MS

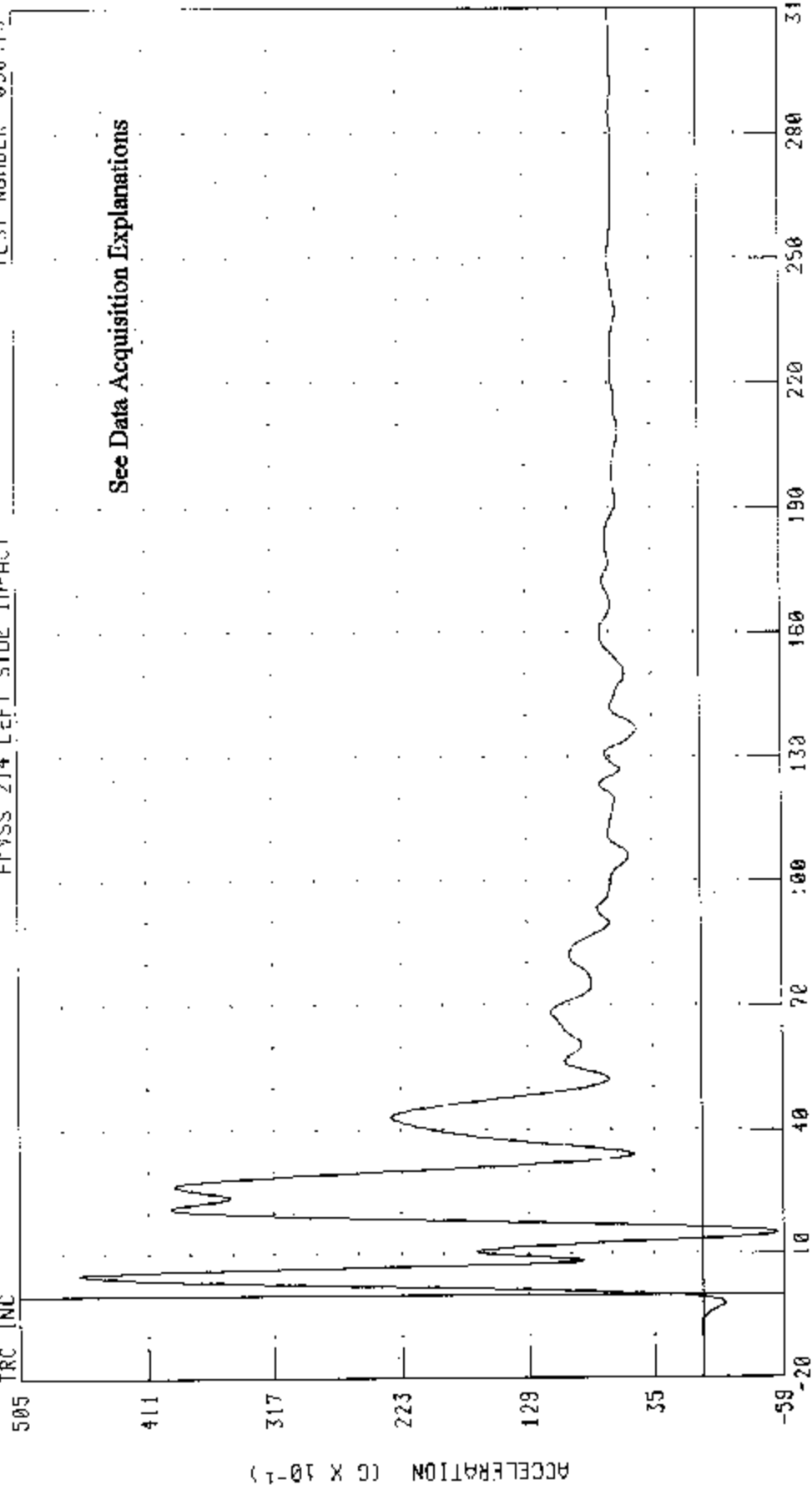
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEVACY

LEFT SIDE SILL AT REAR SEAT Y-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



CHANNEL: LRSYG1 FILTER: CH. CLASS: 50

PEAK DATA 46 16 G 0 5 0⁴ MS, -5.45 G @ 15 12 MS

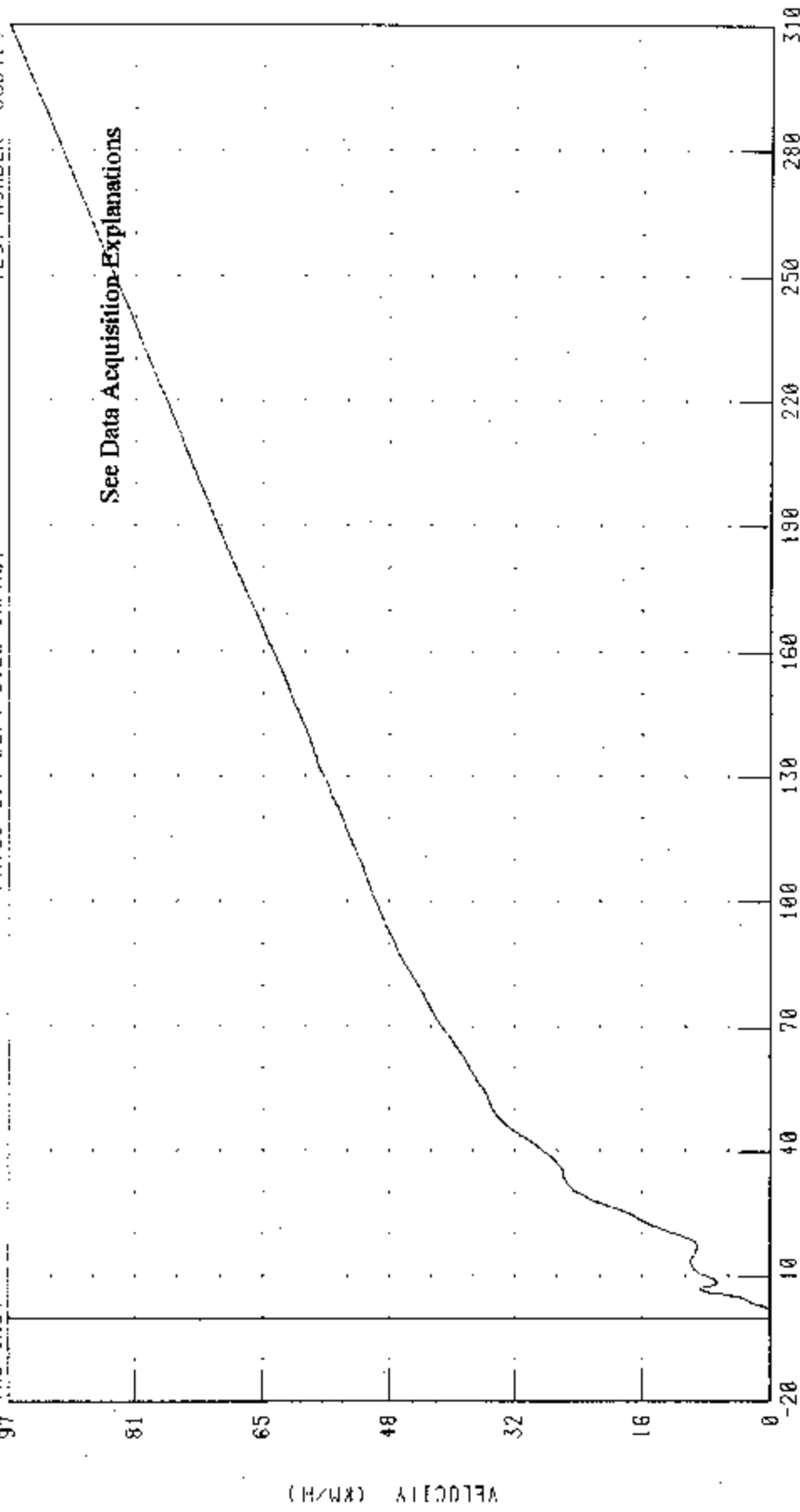
55/20 KPH 00 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT SIDE SIII AT REAR SEAT V-AXIS VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



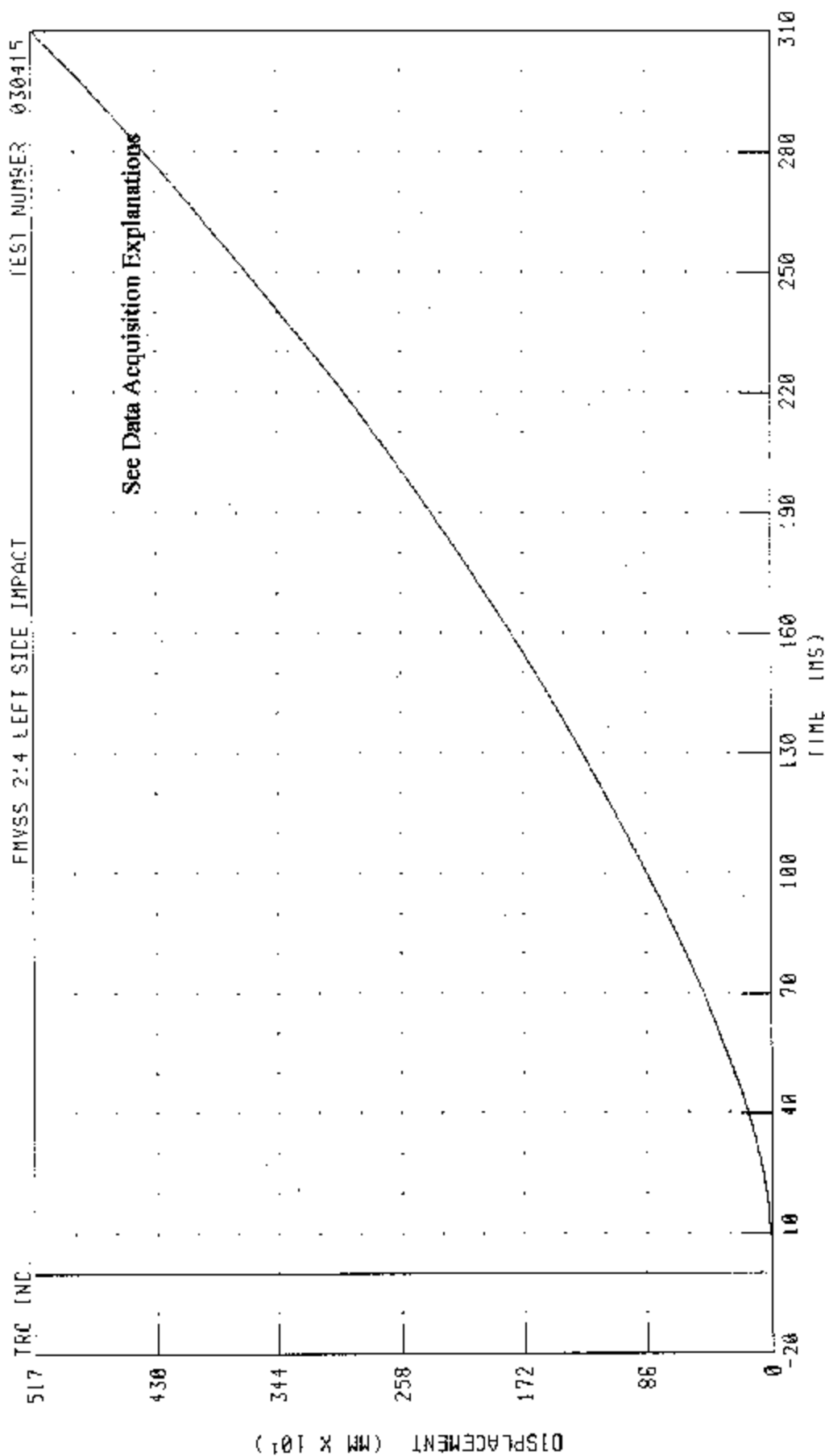
TIME (MS)

PEAK DATA 97 61 KM/H @ 310 00 MS; -0 07 KM/H @ 1.60 MS

CHANNEL: LRSYV1 FILTER: CH. CLASS 180

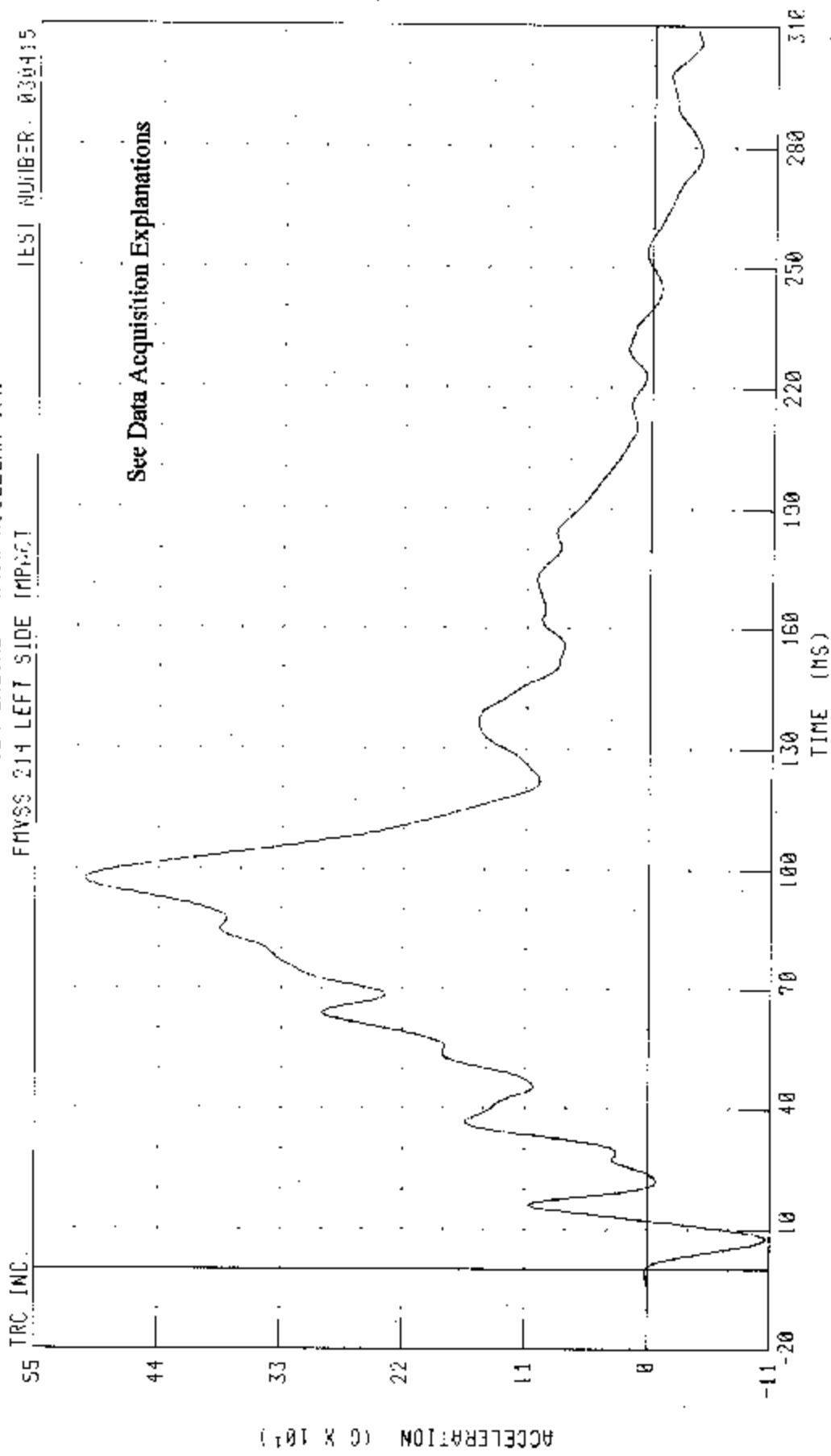
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT SIDE SILL AT 3FAR SEAT V-AXIS DISPLACEMENT



CHANNEL: LRSYD1 FILTER: CH. CLASS 180 PEAK DATA: 5171 70 MM @ 310 00 MS; -0 02 MM @ 2 08 MS

55/28 KPH SO UNCREFT SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU IMPACT
 LEFT FRONT DOOR ON CENTERLINE X-AXIS ACCELERATION



FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415

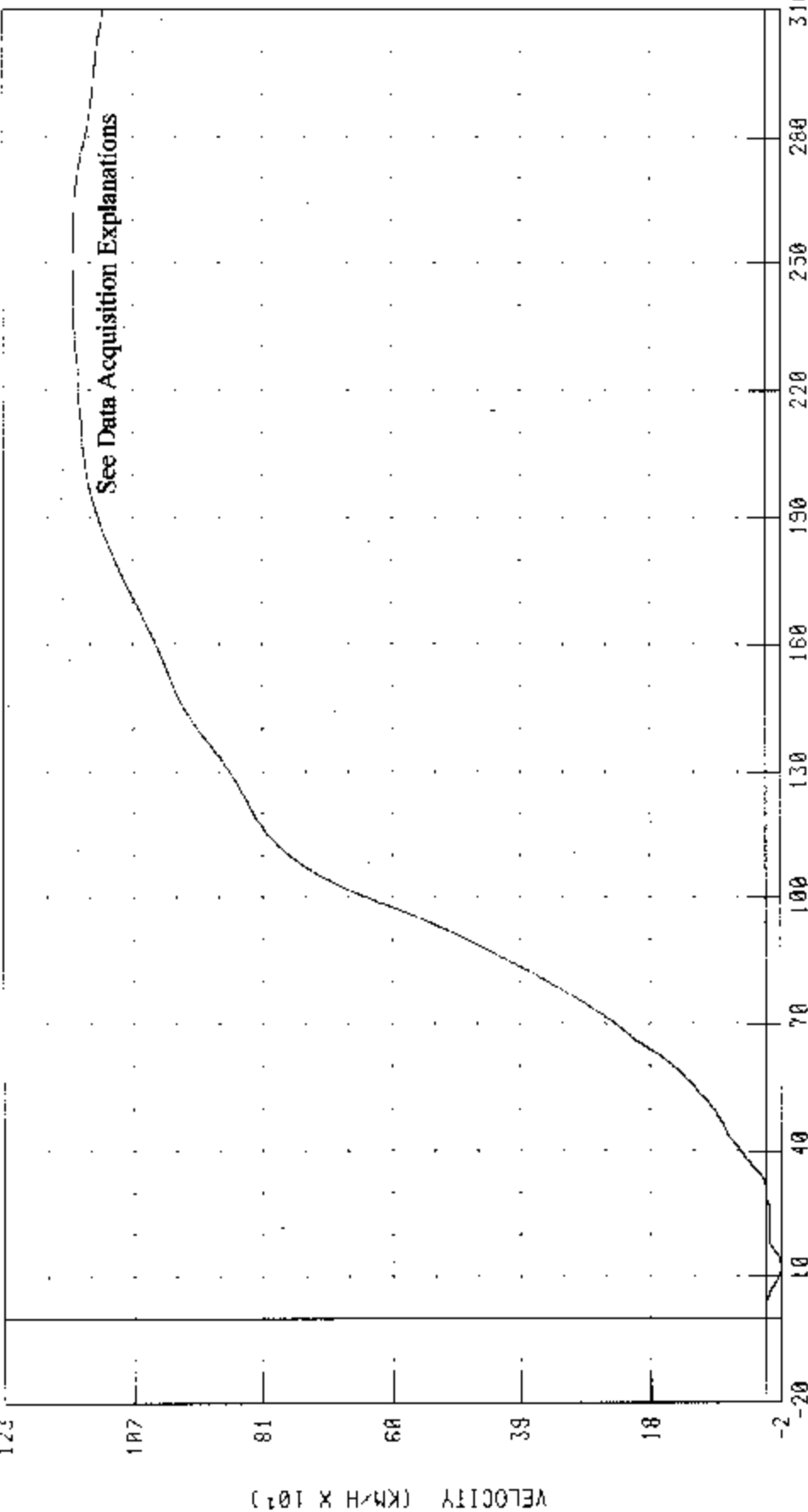
CHANNEL: LFCYG1 FILTER: CH CLASS 60 PEAK DATA: 525.70 G @ 97.60 MS, -105.82 G @ 7.68 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT FROM: DOOR ON CENTERLINE 7-AXIS VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

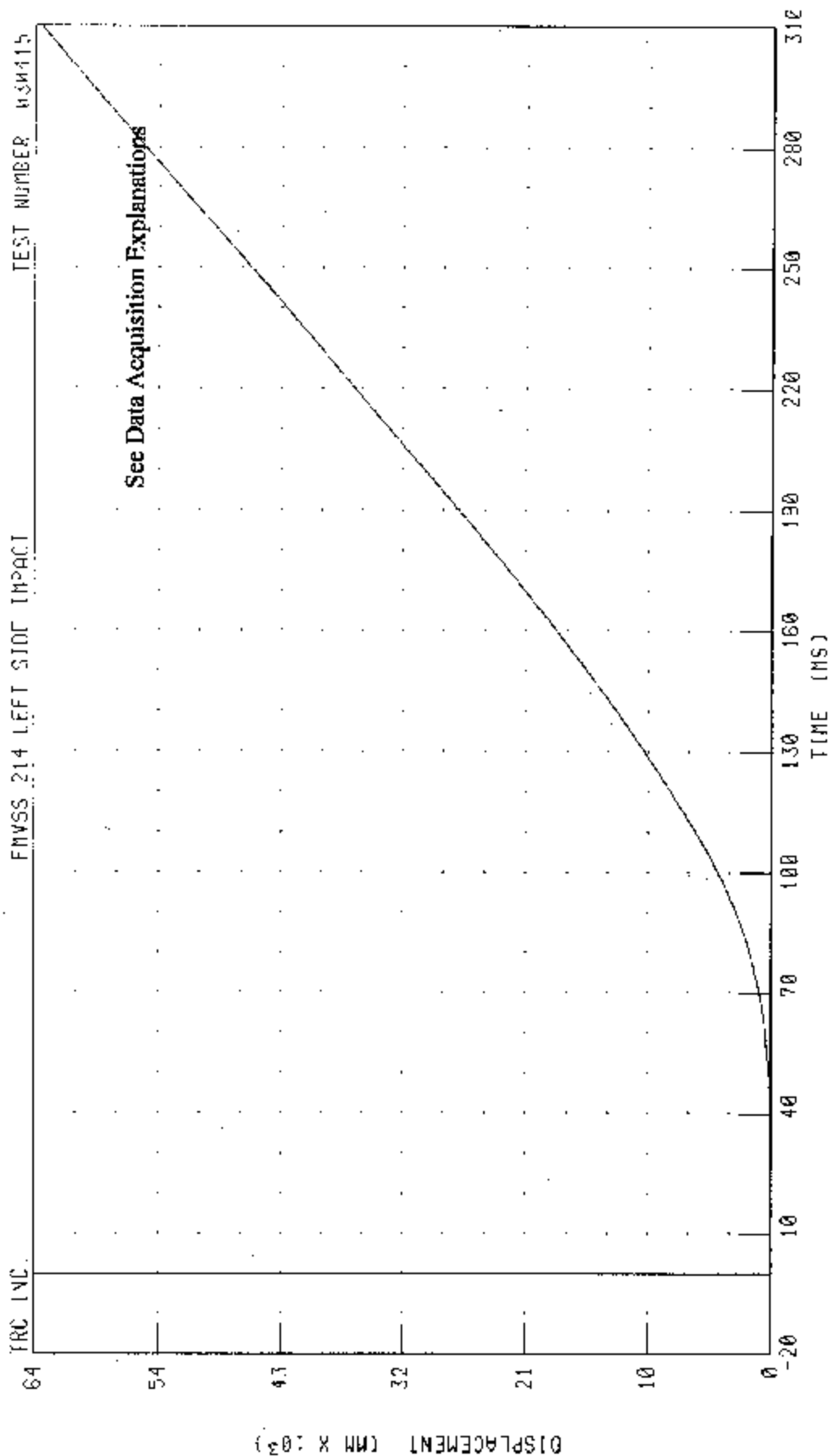
IRC INC



CHANNEL: LFCYV1 FILTER: CH CLASS 180 PEAK DATA: 1122.50 KPH/H @ 239.68 MS; -23.40 KPH/H @ 12.00 MS

030415

55/28 KPH 90 DEGREE STIFF IMPACT (MOVING DEFORMABLE BARRIER) INFO: FFT SINE OF 2003 SUBARU LEVANCY
LEFT FRONT DOOR ON CENTERLINE Y-AXIS DISPLACEMENT

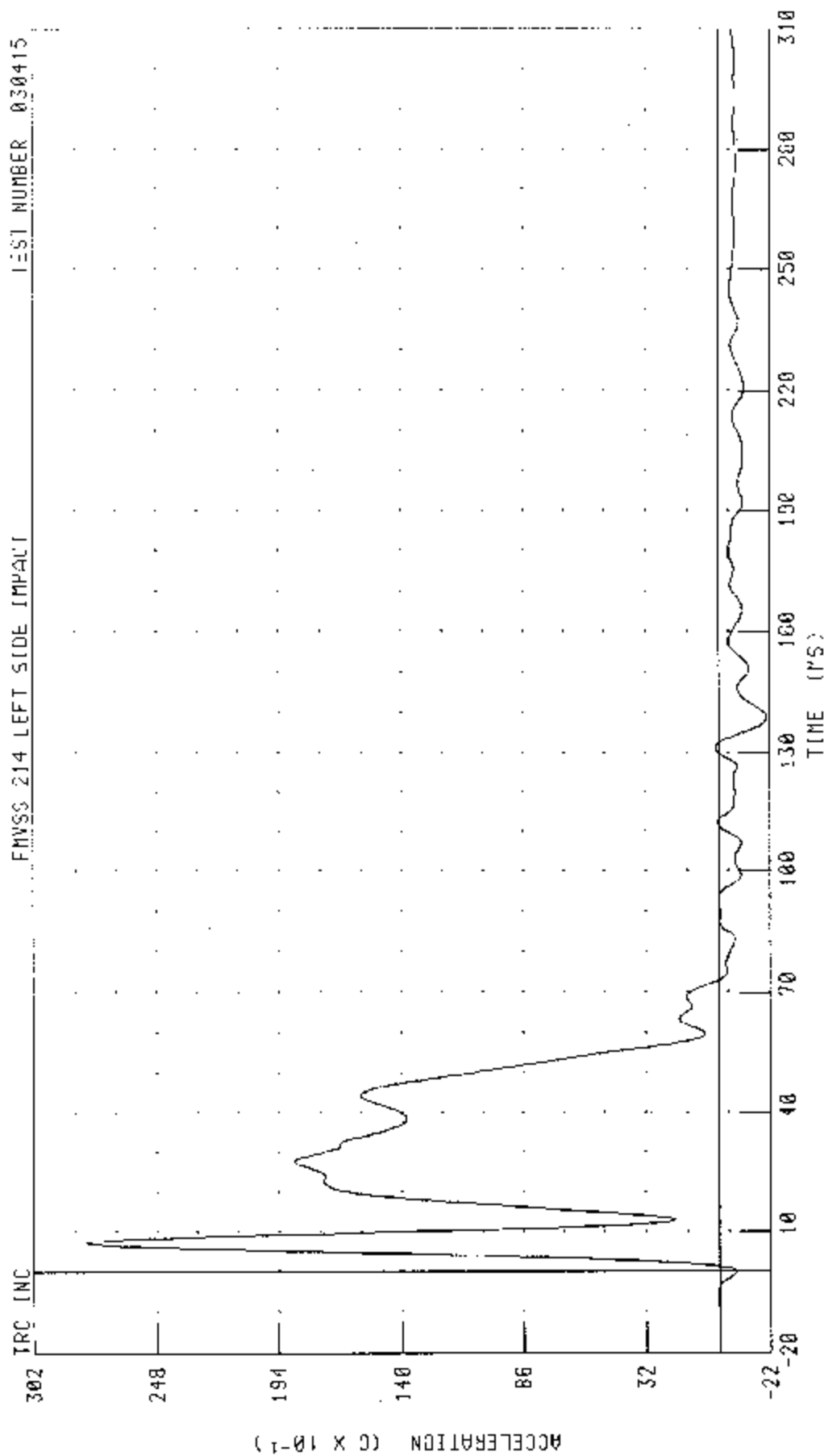


PEAK DATA: 64399 92 MM @ 310.00 MS, -79 03 MM @ 31.52 MS

CHANNEL LFCYD1 FILTER CH. CLASS 180

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS ACCELERATION

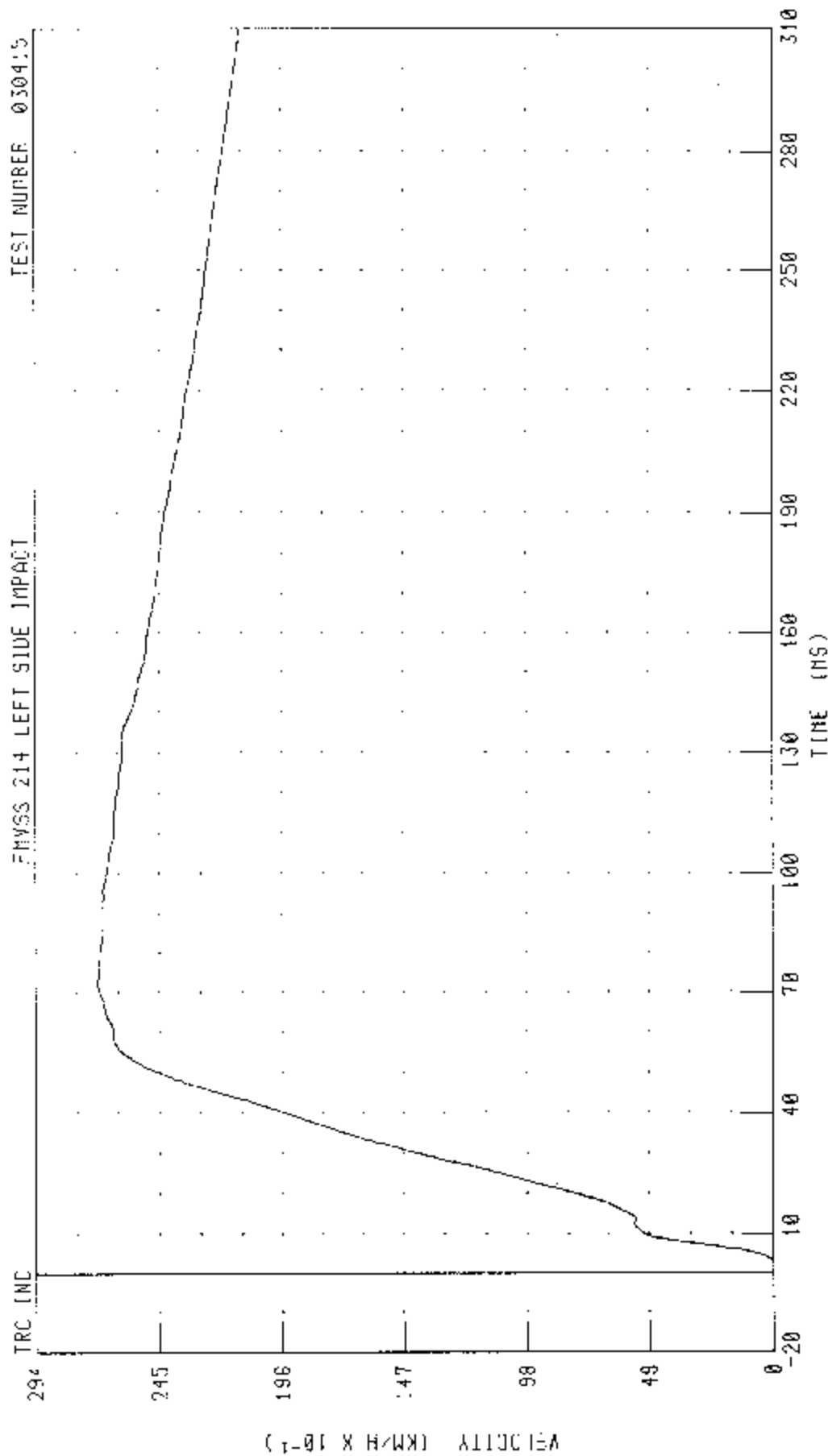


CHANNEL: RRTYG1 FILTER: CH CLASS 60

PEAK DATA: 27 90 0 0 7 28 MS, -2.09 0 0 139.34 MS

55-28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT REAR OCCUPANT COMPARTMENT Y-AXIS VELOCITY



CHANNEL: RRTYV1 FILTER: CH. CLASS: 100

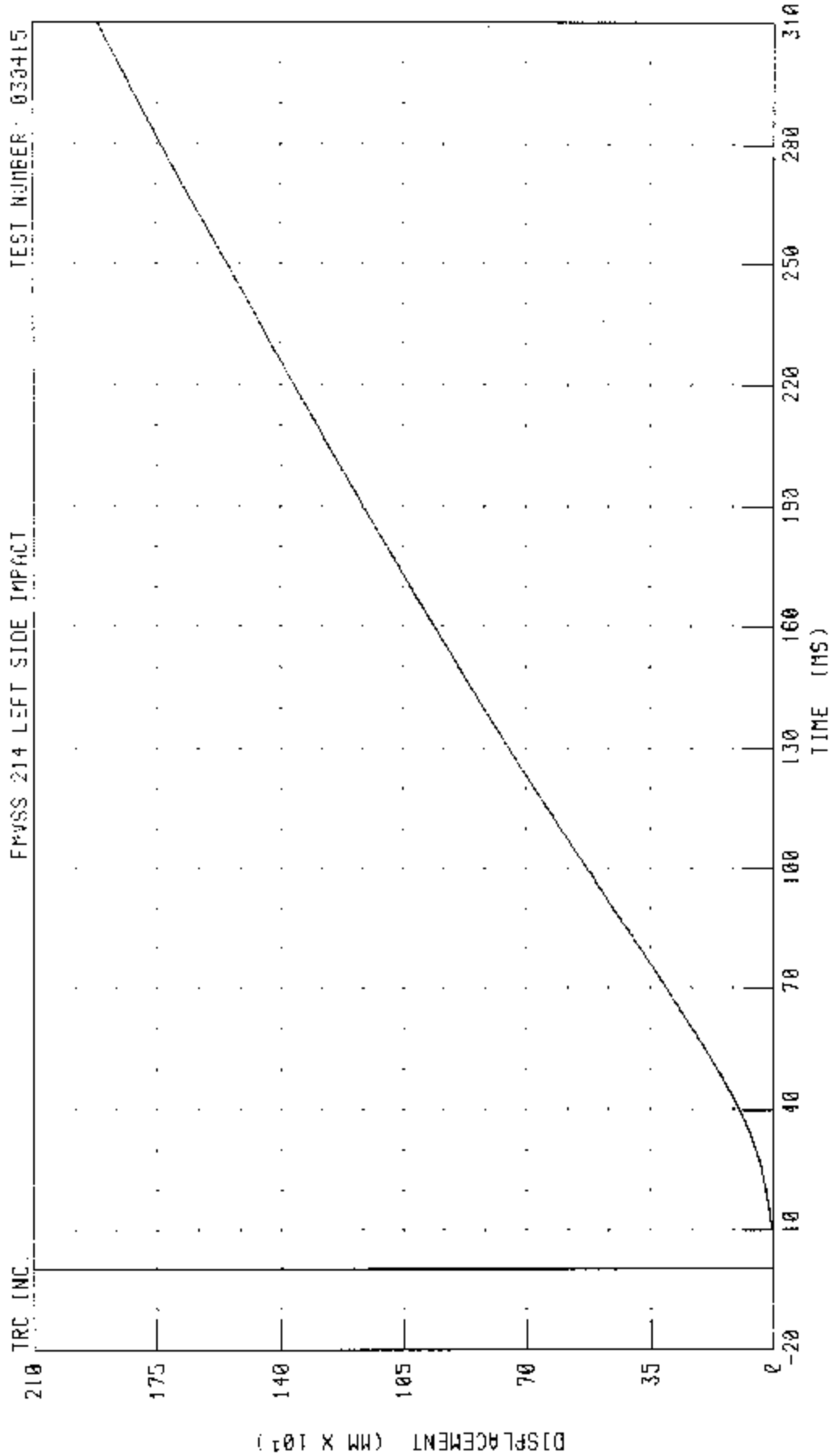
PEAK DATA: 26.92 KM/H @ 72.40 MS, 0.80 KM/H @ 2.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

RIGHT REAR OCCUPANT COMPARTMENT Z-AXIS DISPLACEMENT

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415

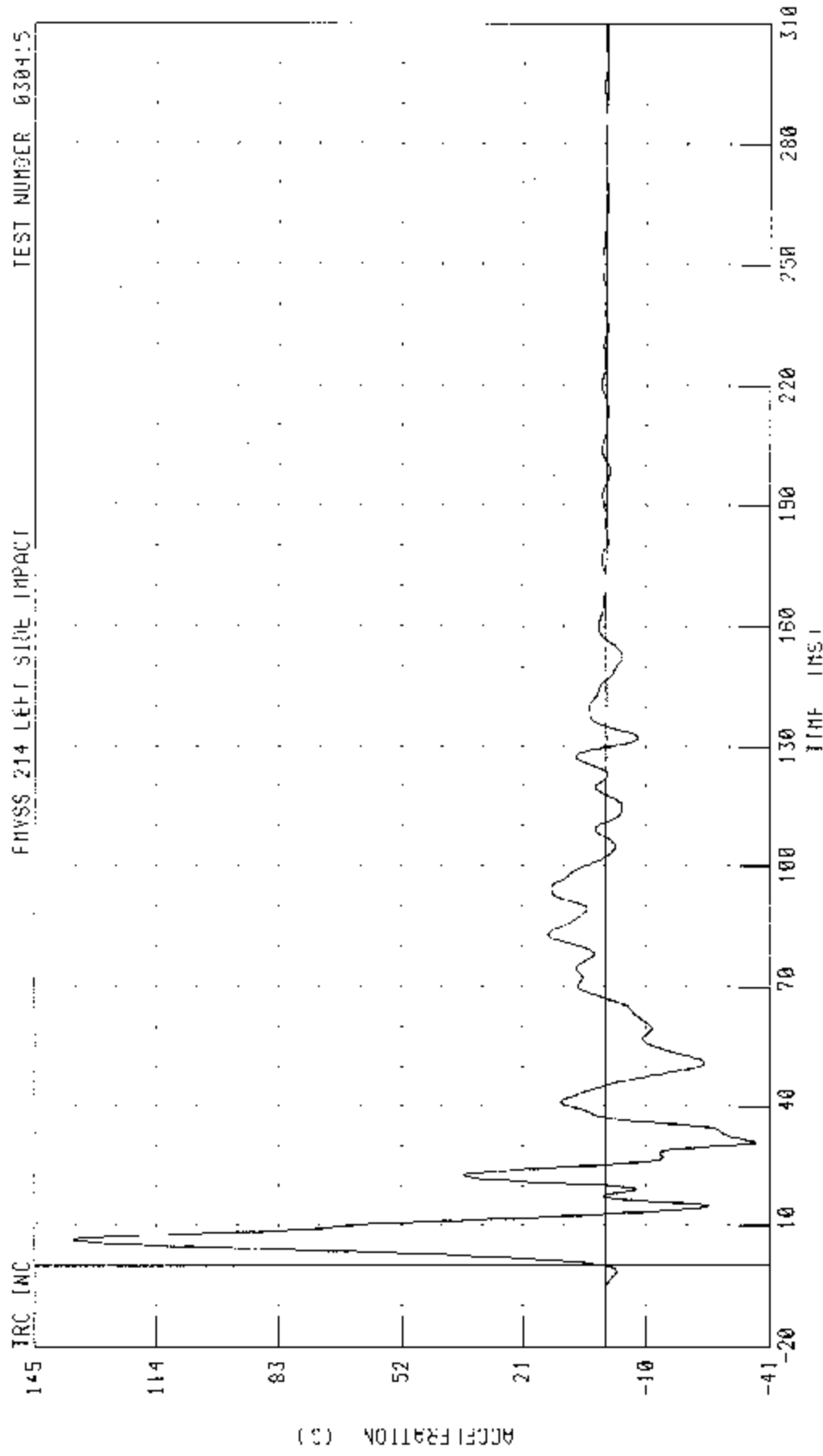


CHANNEL RRTY01 FILTER: CH CLASS 180

PEAK DATA: 1918 82 M1 @ 310 00 MS, 0 00 MP @ 2 56 MS

55.28 KPH 50 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU HATCH

LEFT FRONT DOOR MID-REAR Y-AXIS ACCELERATION



CHANNEL: LFMYG1 FILTER: CH CLASS 60 PEAK DATA 135 34 6 48 MS. -57 48 0 50 96 MS

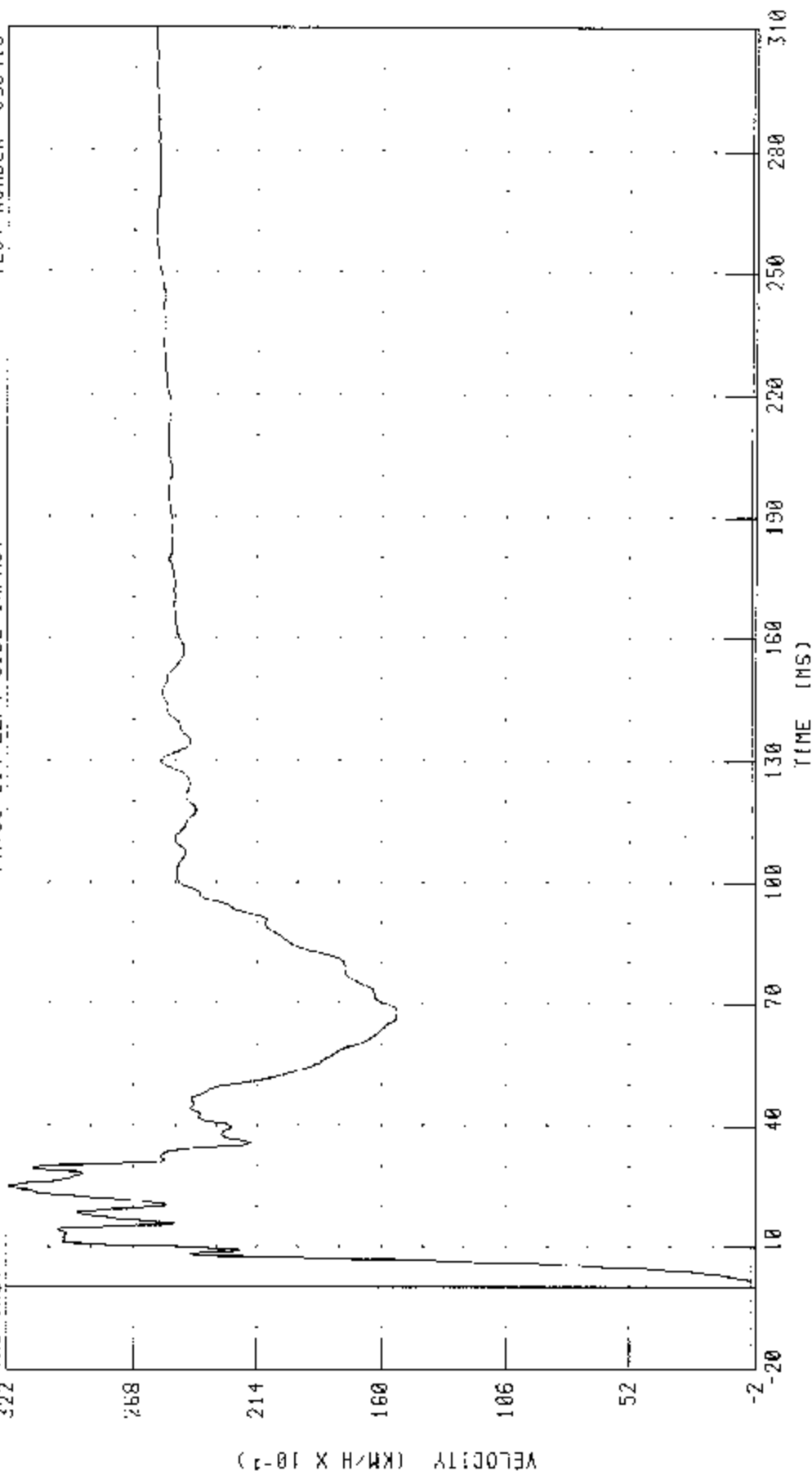
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT FRONT DOOR Y11-REAR Y-AXIS VELOCITY

TRC INC.

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415

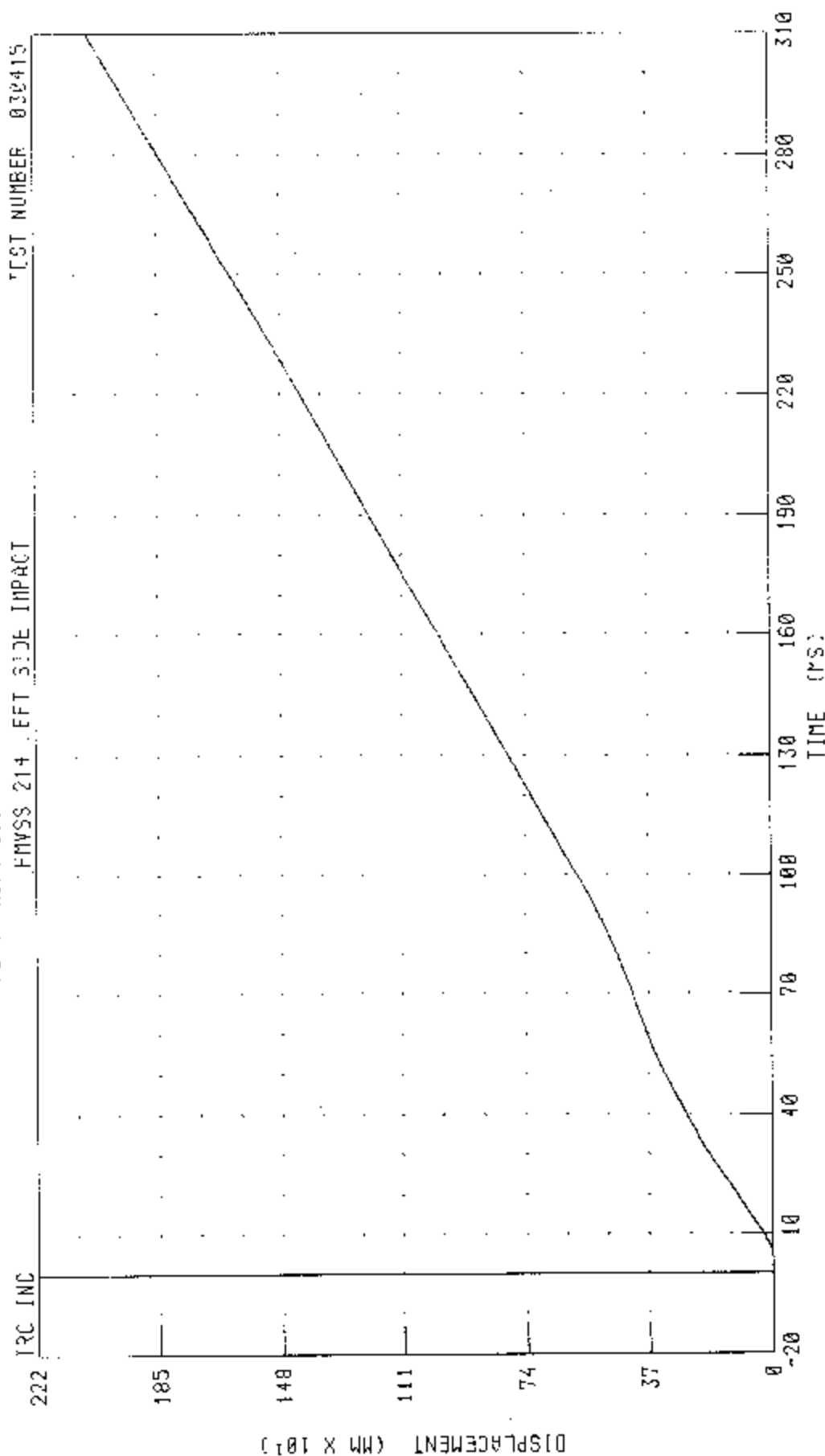


CHANNEL: LFMV1 FILTER: CH. CLASS 180

PEAK DATA: 32 10 KM/H @ 25.36 MS, -0 01 KM/H @ 0 64 MS

55/28 KP-4 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2007 SUBARU LEGACY

LEFT FRONT DOOR MID-REAR Y AXIS DISPLACEMENT



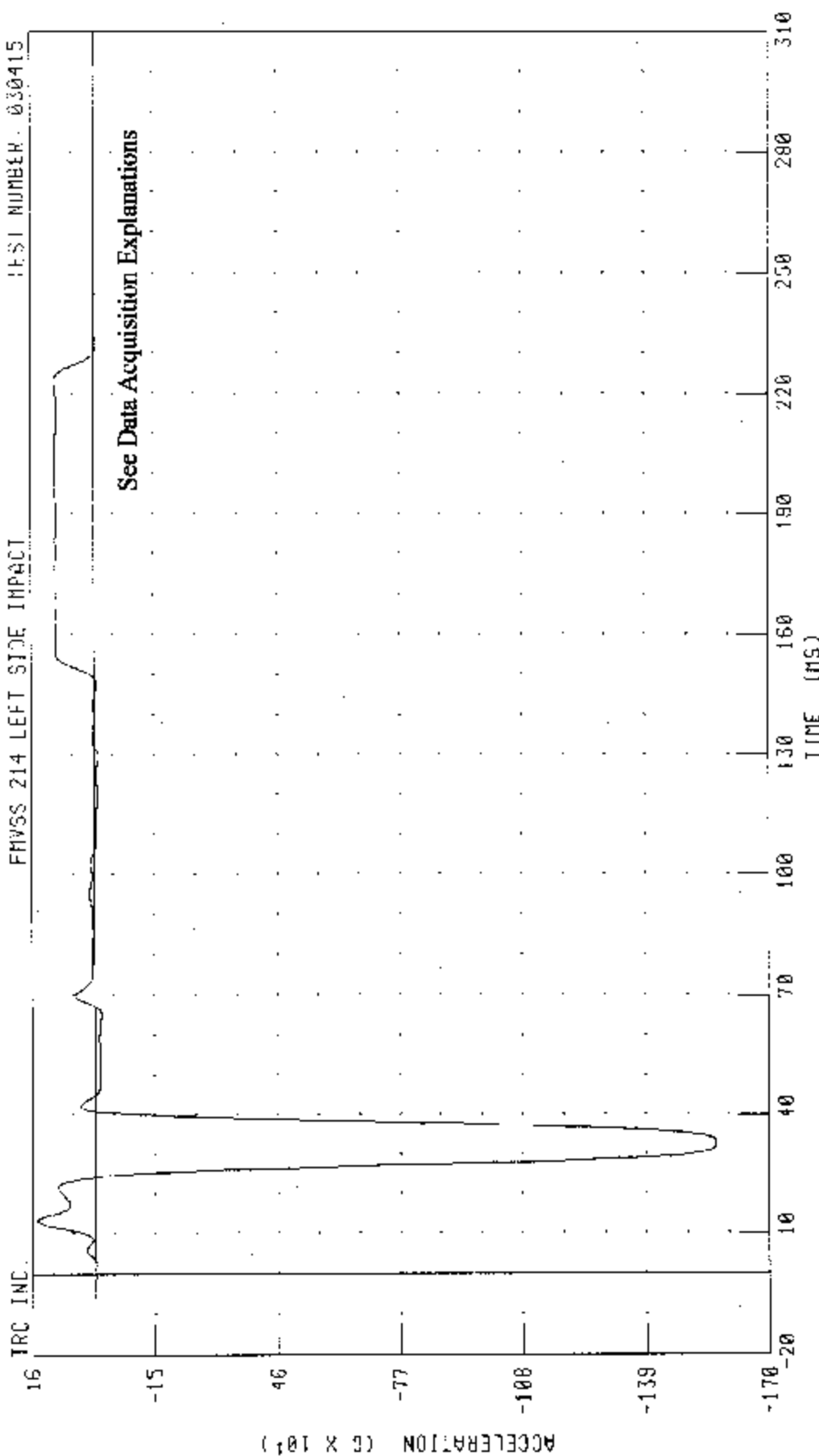
CHANNEL LFMYD1 FILTER CH. CLASS 180

PEAK DATA 2058 95 MM @ 310 00 MS, 0.00 MM @ 0.96 MS

55/20 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT FRONT DOOR UPPER CENTERLINE Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415



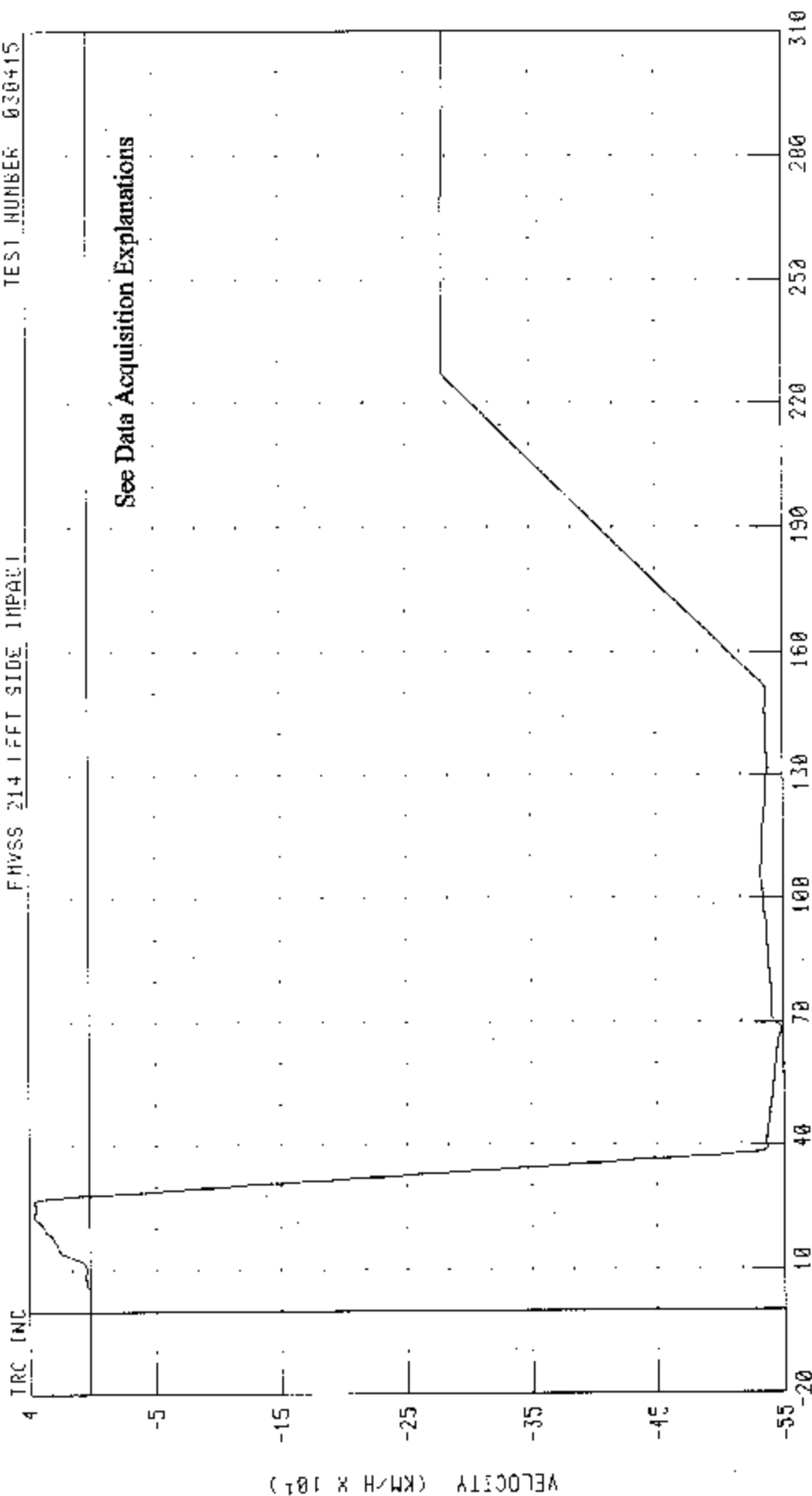
PEAK DATA: 147 14 G @ 13 28 MS; -1564 25 G @ 32 64 MS

CHANNEL LFUYG1 FILTER CH. CLASS 60

55/28 KPH 30 DEGREE SIDE IMPACT (MOVABLE DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUDARU LFCARITY
LEFT FRONT 500% UPPER CENTERLINE Y-AXIS VELOCITY

TEST NUMBER 030415

FWSS 214 LEFT SIDE IMPACT



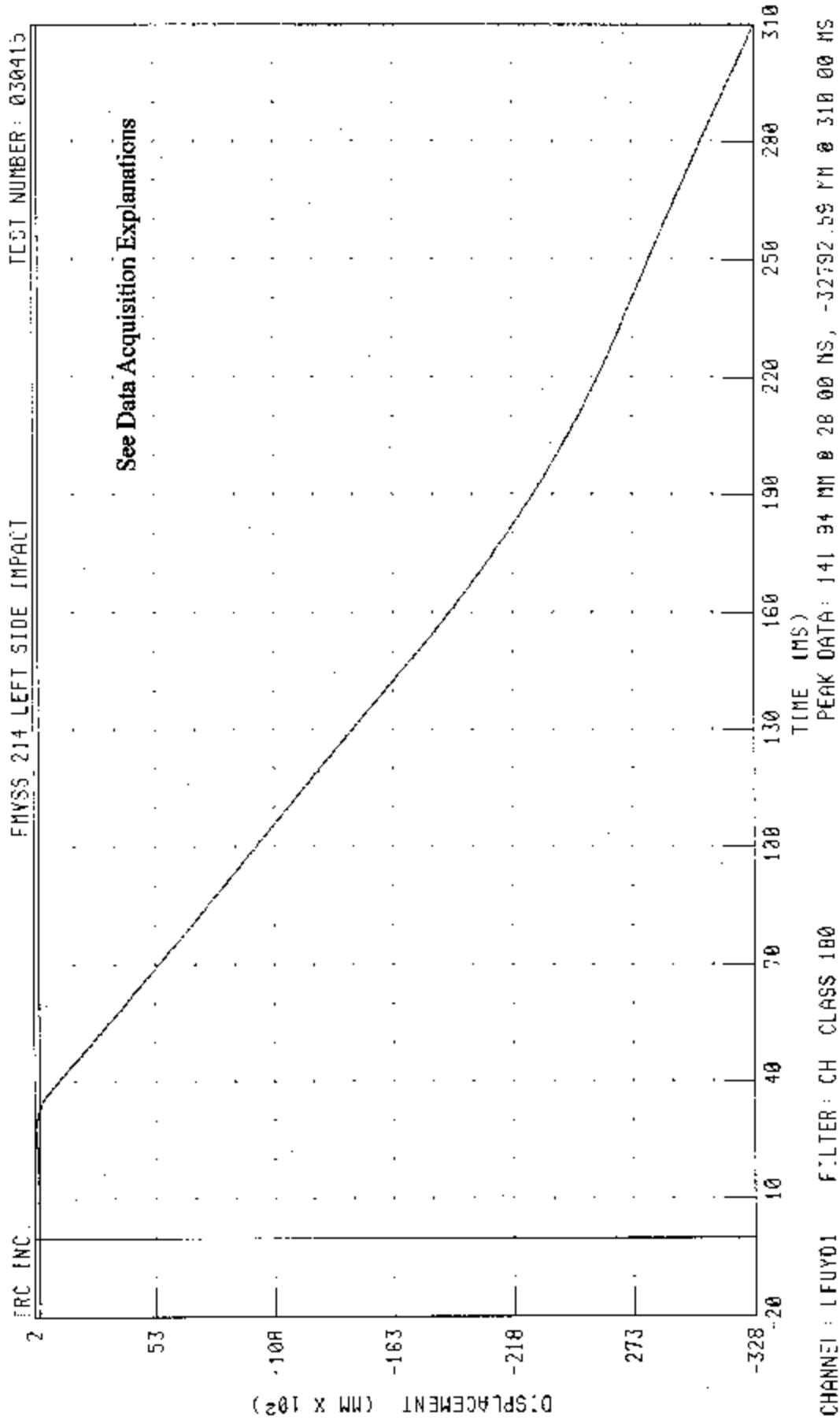
TIME (MS)

PEAK DATA 43.33 KM/H @ 26.40 MS; -552.06 KM/H @ 68.08 MS

CHANNEL LFUYV1 FILTER CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT FRONT DOOR UPPER CENTERLINE Y-AXIS DISPLACEMENT



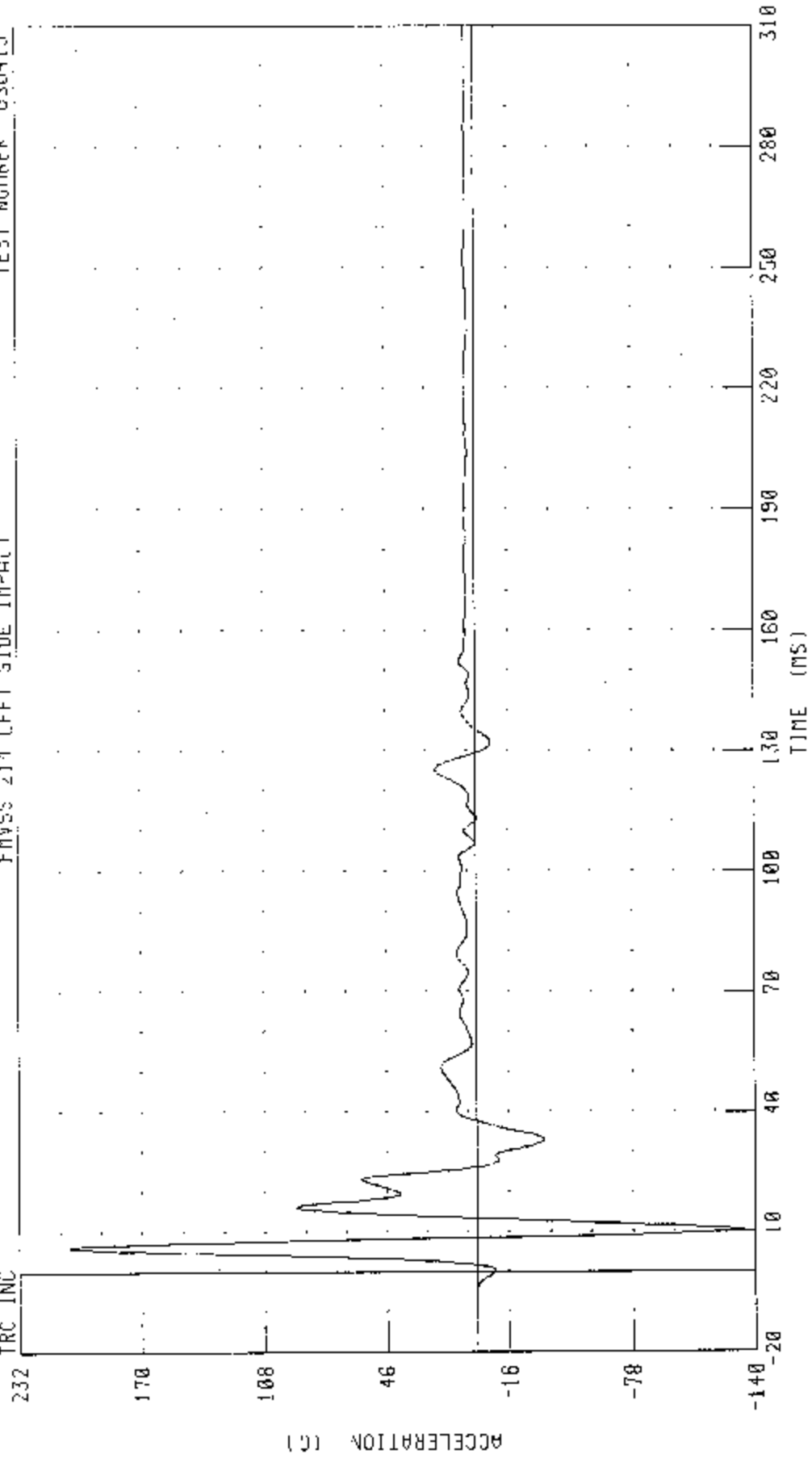
55/78 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR OUTER HUB REAR Y-AXIS ACCELERATION

TEST NUMBER 030415

FMYSS 214 LEFT SIDE IMPACT

TRC INC



PEAK DATA 206.88 G @ 6.24 MS, -134.34 G @ 10.40 MS

CHANNEL: LRMV01 FILTER: CH. CLASS 60

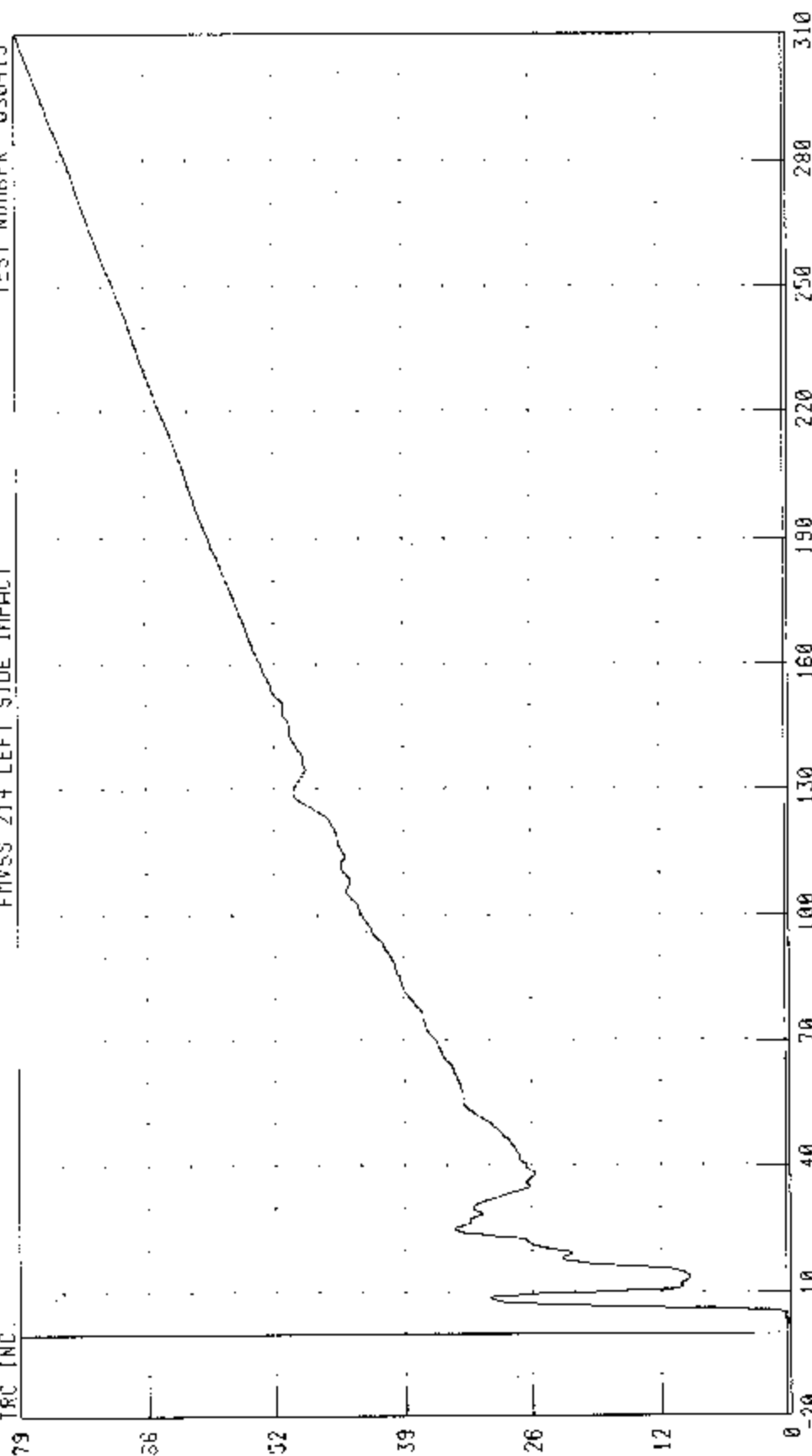
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIERS) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR TOOR MID-REAR Y-AXIS VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



TIME (MS)

PEAK DATA: 79.31 KM/H @ 310.00 MS; -0.21 KM/H @ 2.80 MS

CHANNEL: LRMV1 FILTER: CH. CLASS 180

VELOCITY (KM/H)

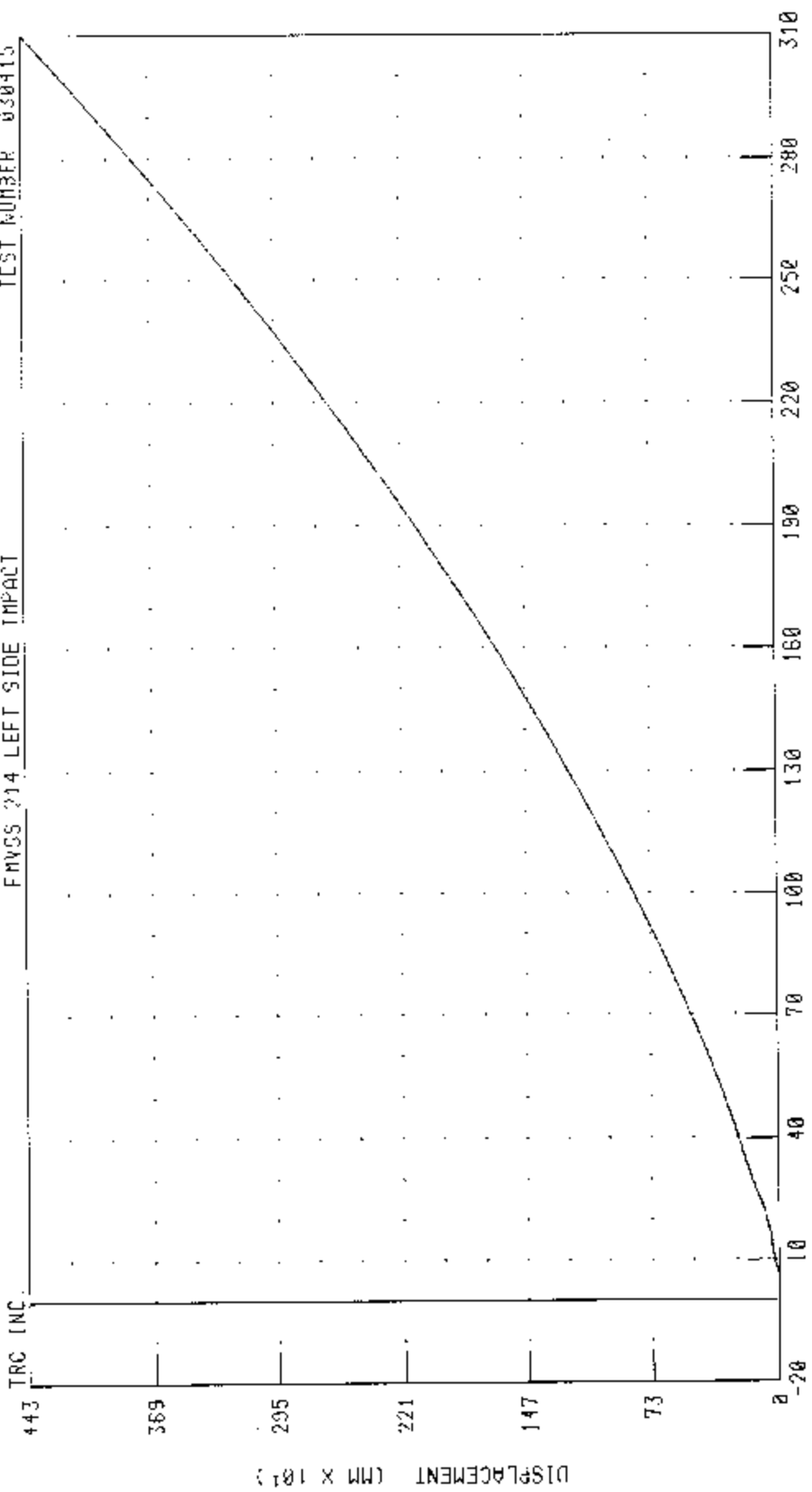
55/28 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER INTO LEFT SIDE OF 20M3 SUHARU LEGACY

LEFT REAR DOOR MID-REAR Y-AXIS DISPLACEMENT

TEST NUMBER 030415

FMYCS 214 LEFT SIDE IMPACT

TRC INC.



DISPLACEMENT (MM X 10¹)

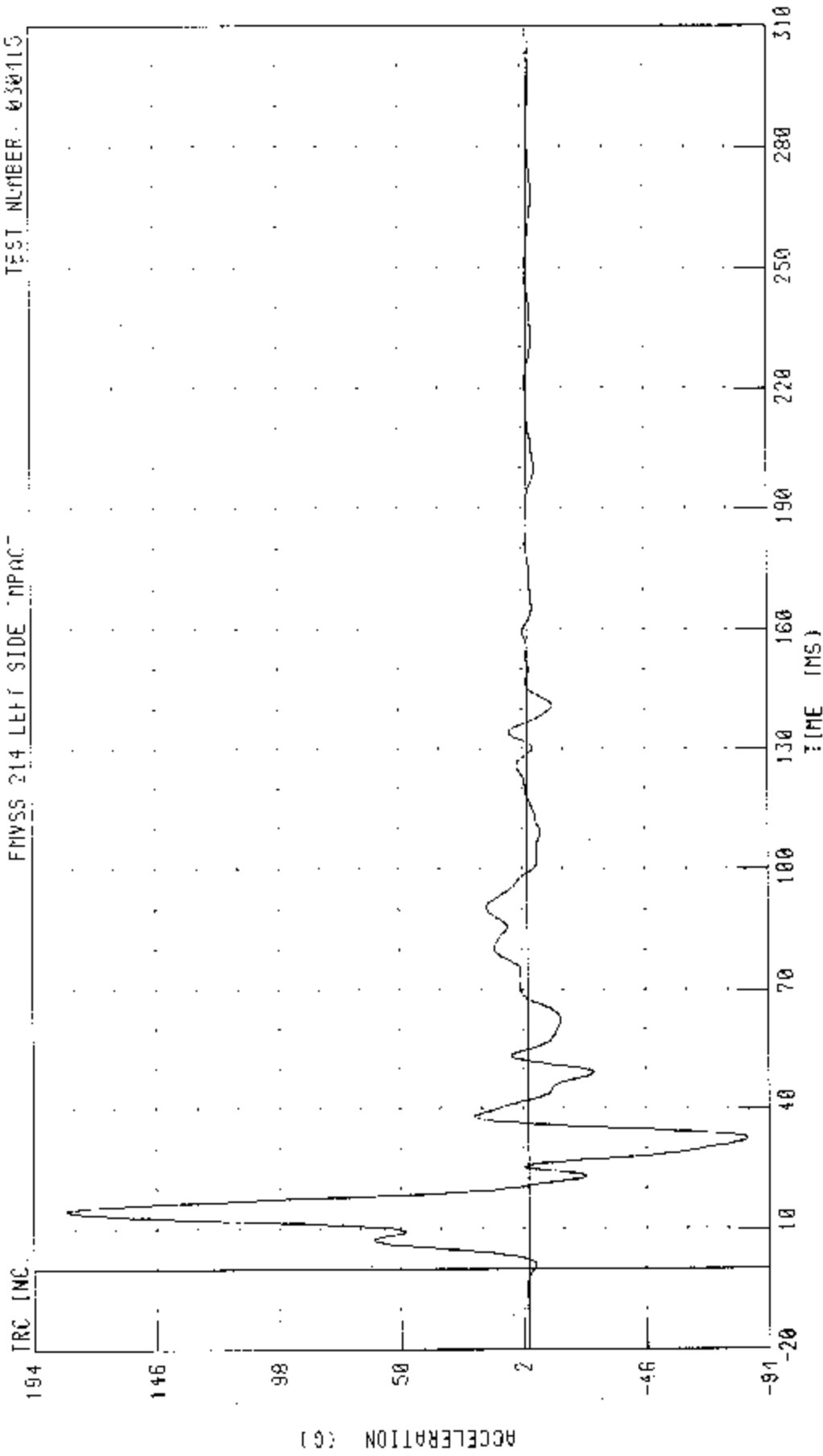
TIME (MS)

PEAK DATA: 4435.76 MM @ 310.00 MS; -0.06 MM @ 3.44 MS

CHANNEL: LRMVD1 FILTER: CH. CLASS 180

55/28 XPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR DOOR UPPER CENTERLINE Y-AXIS ACCELERATION

TRC INC. FMYSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415



PEAK DATA: 180 98 0 @ 14.56 MS; -35 80 0 @ 32.56 MS

CHANNEL: LRU01 FILTER: CH CLASS: 60

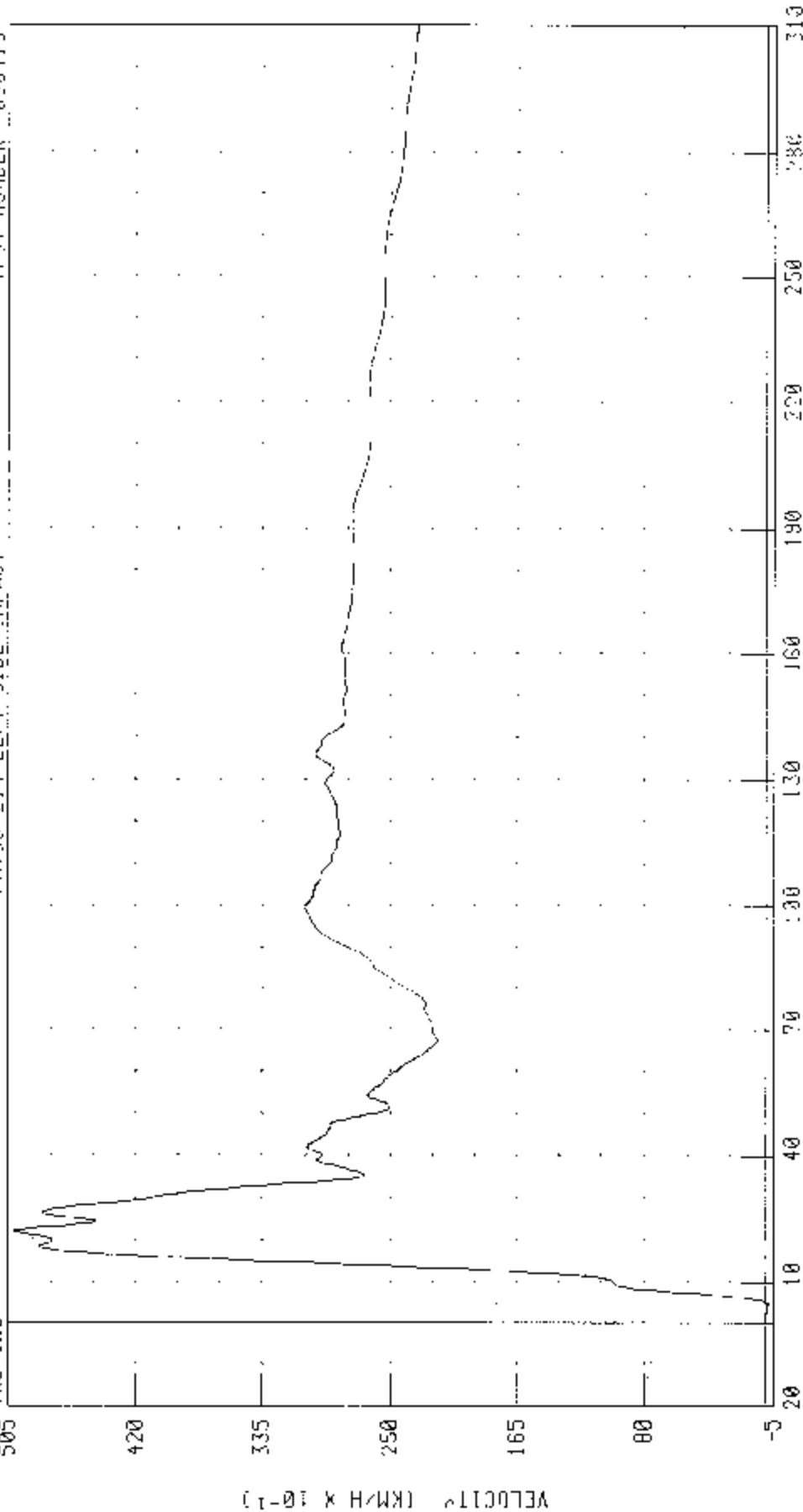
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

IFE REAR RUCK UPPER CENTERLINE Y-AXIS VF BODY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



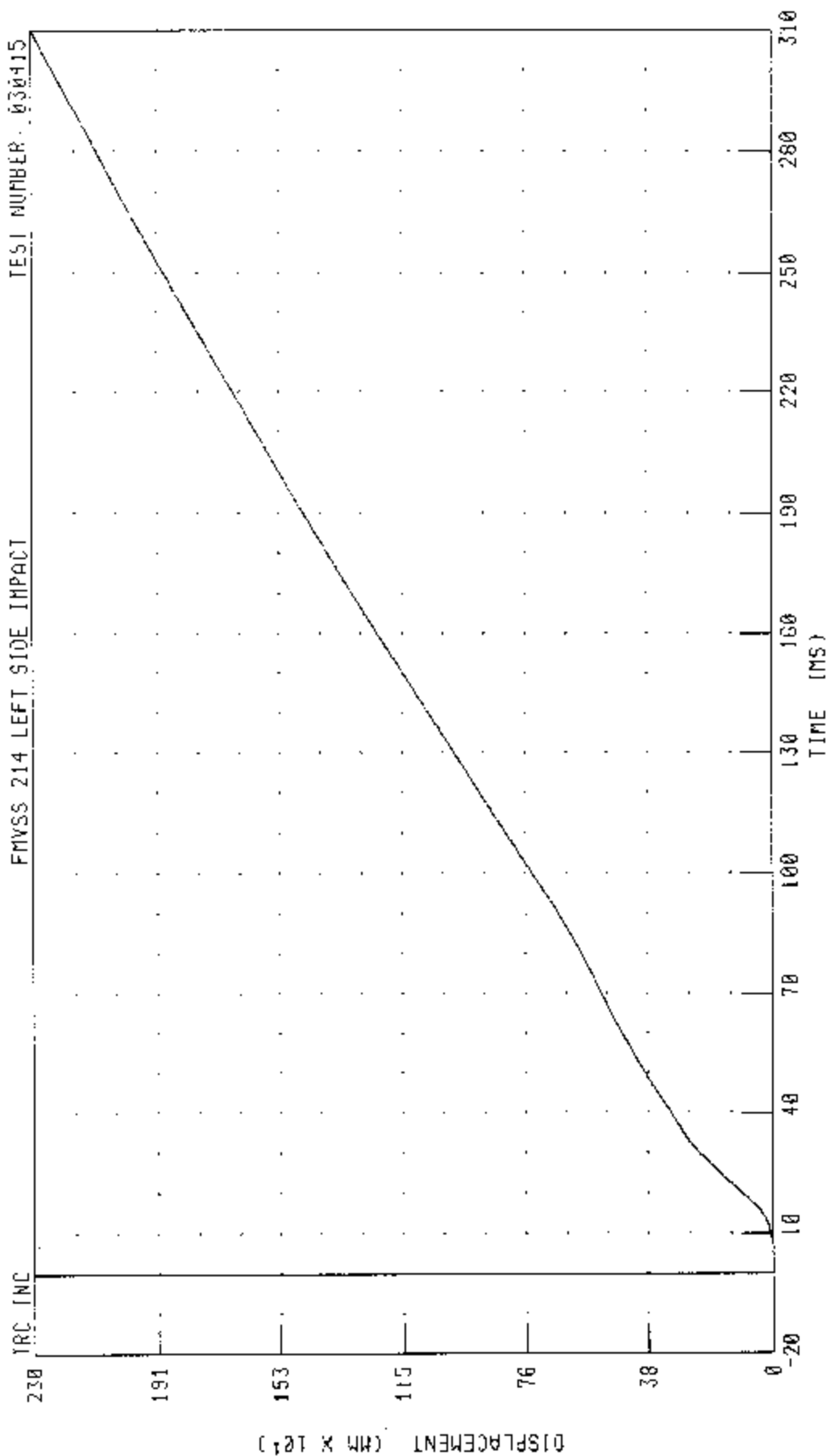
TIME (MS)

PEAK DATA 50.12 CH/H @ 77.16 MS. -0.19 KM/H @ 56.15

CHANNEL: LRUYY1 FILTER: CH CLASS 120

55/28 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER INTO FFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR DOOR UPPER CENTERLINE Y-AXIS DISPLACEMENT



CHANNEL: LRUVD1 FILTER: CH. CLASS 180

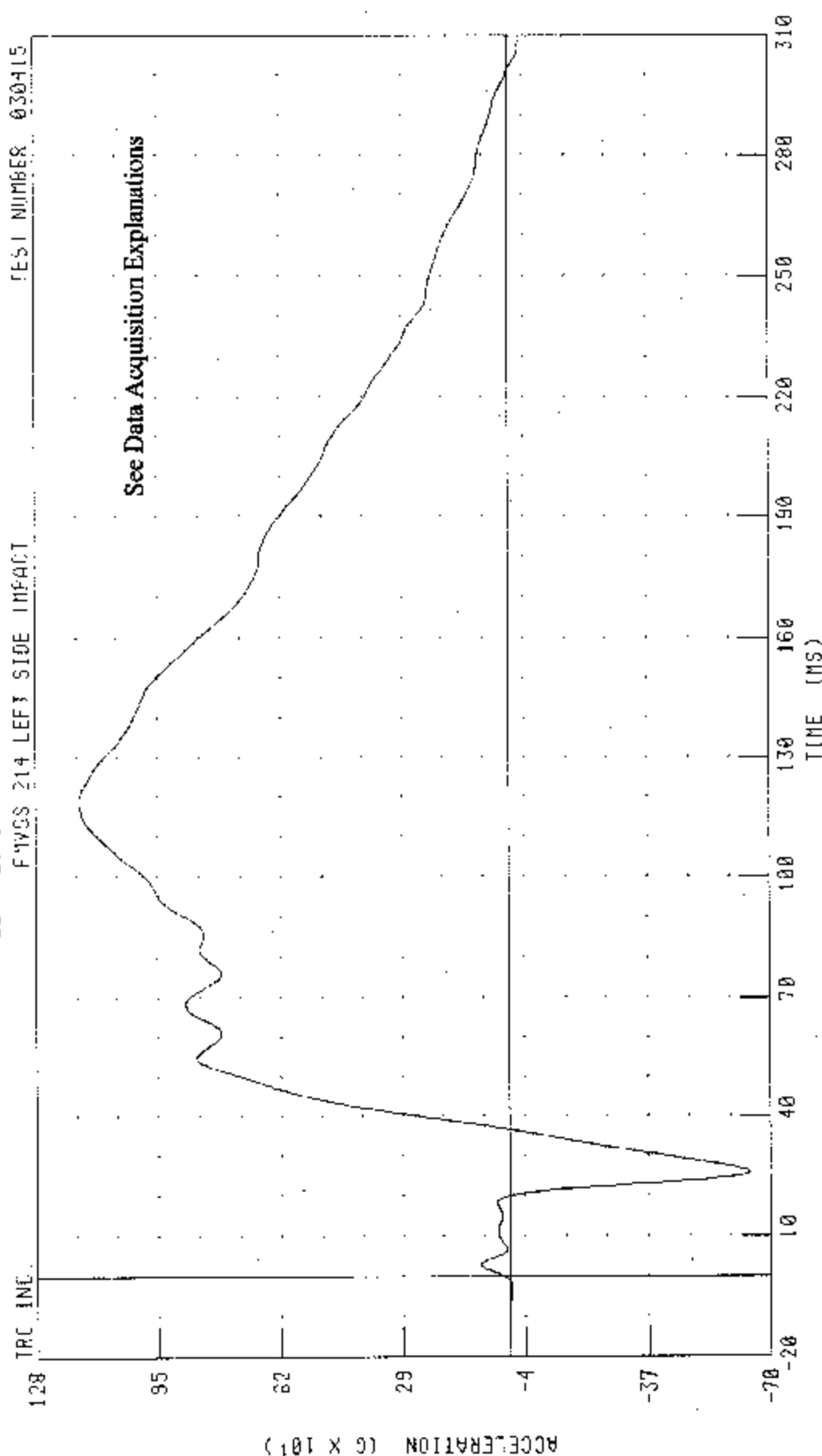
PEAK DATA: 2302 90 MM @ 510 00 MS, -0.07 MM @ 5 12 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARrier) INTO LEFT SIDE OF 2007 SUBARU LEGACY

LEFT LOWER A-POST Y-AXIS ACCELERATION

F1VGS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



PEAK DATA: 1163.29 G @ 118.88 MS; -640.76 G @ 25.84 MS

CHANNEL L1AYG1 FILTER: CH CLASS 60

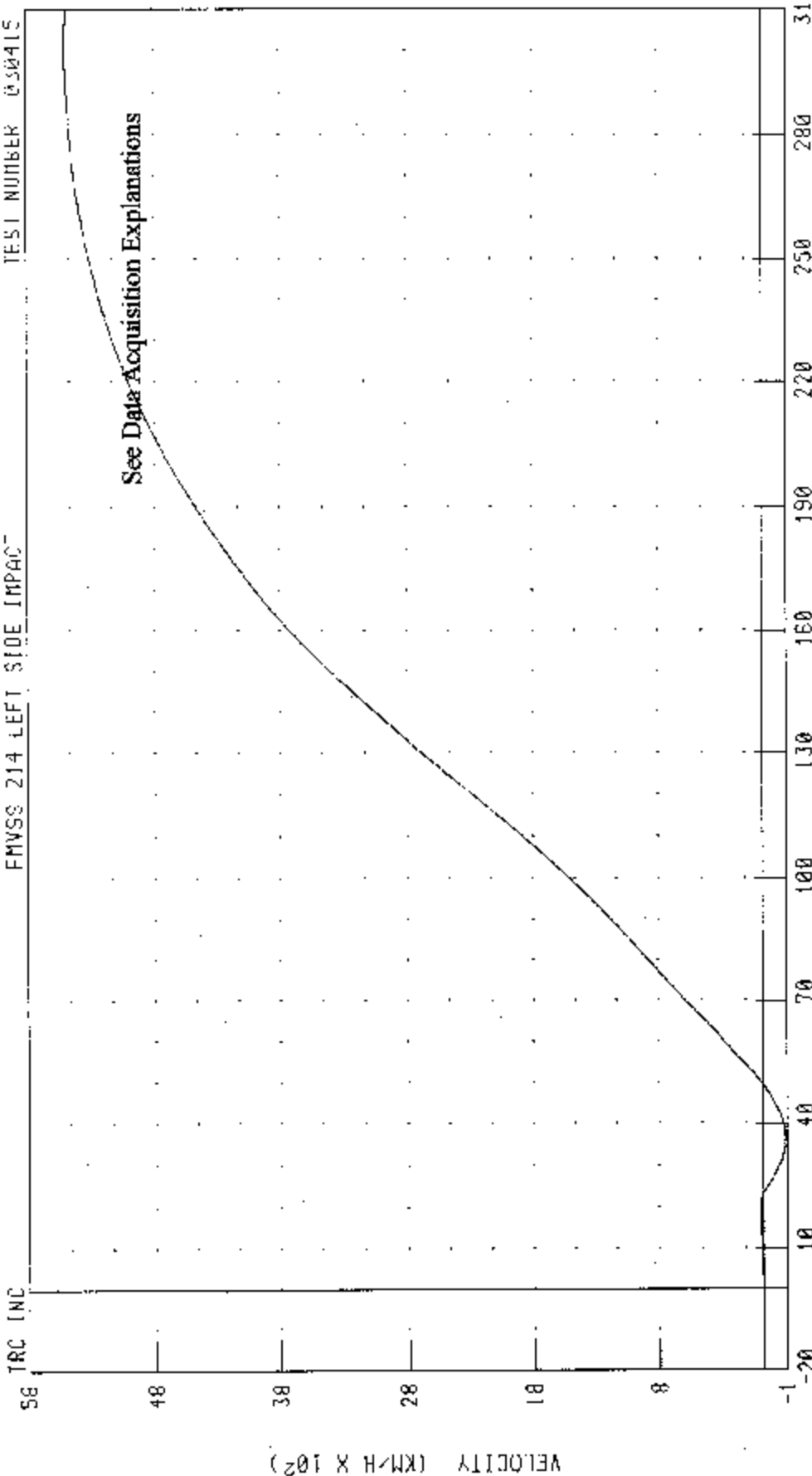
55/28 KPH 30 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER (MID) LEFT SIDE OF 2003 SUBARU LEGACY

LEFT LOWER H-POST Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

TRC INC



TIME (MS)

PEAK DATA: 5505 53 KM/H @ 302.32 MS, -176 89 KM/H @ 36 64 MS

CHANNEL: LLAYV1 FILTER: CH CLASS 180

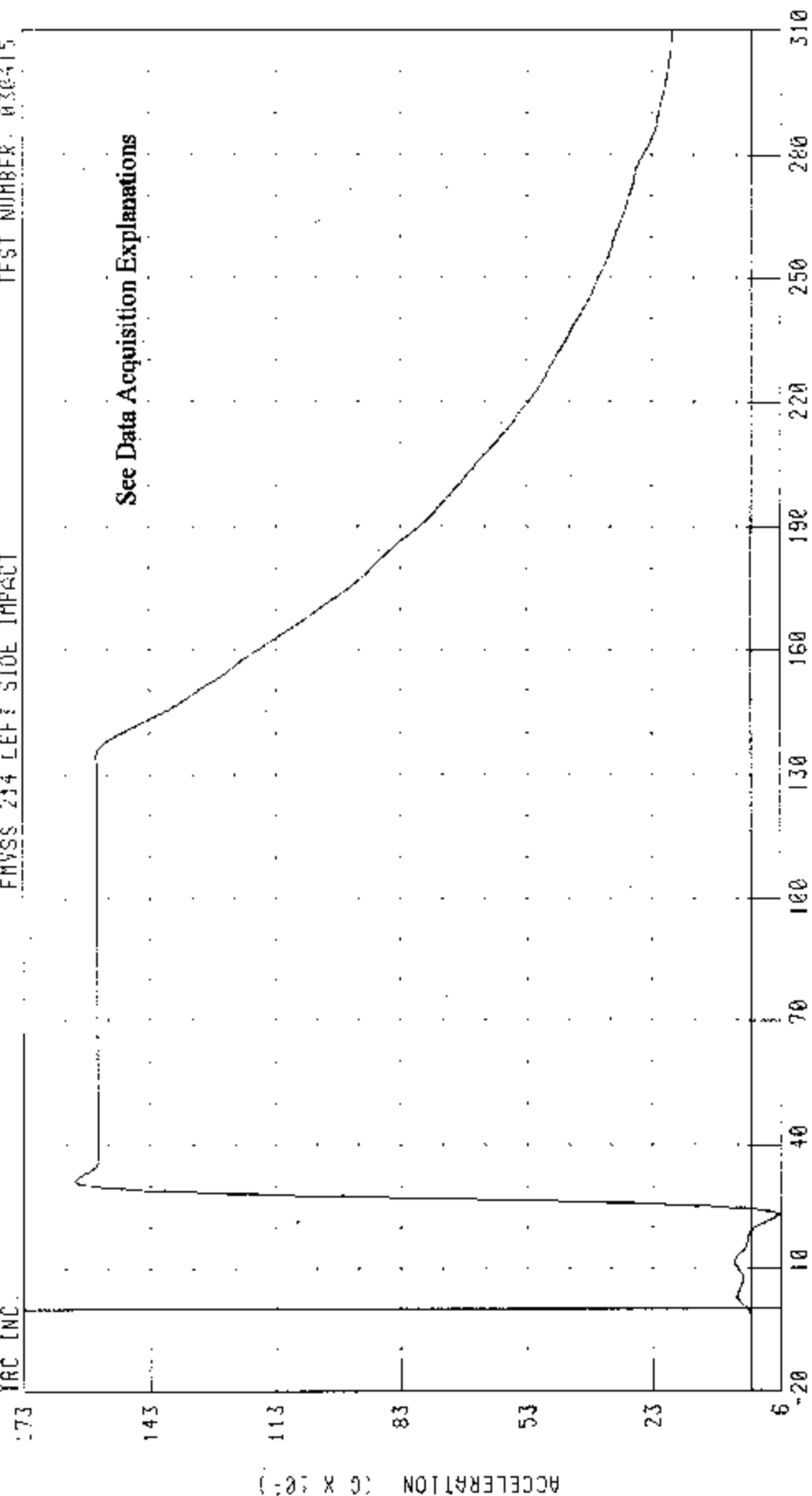
55/28 KFH 98 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARREL) INTO LEFT SIDE OF 2002 SUBARU LEGACY

LEFT MIDDLE A POST Y AXIS ACCELERATION

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

IRC INC.



CHANNEL: LMAYC1 FILTER: CH. CLASS 60

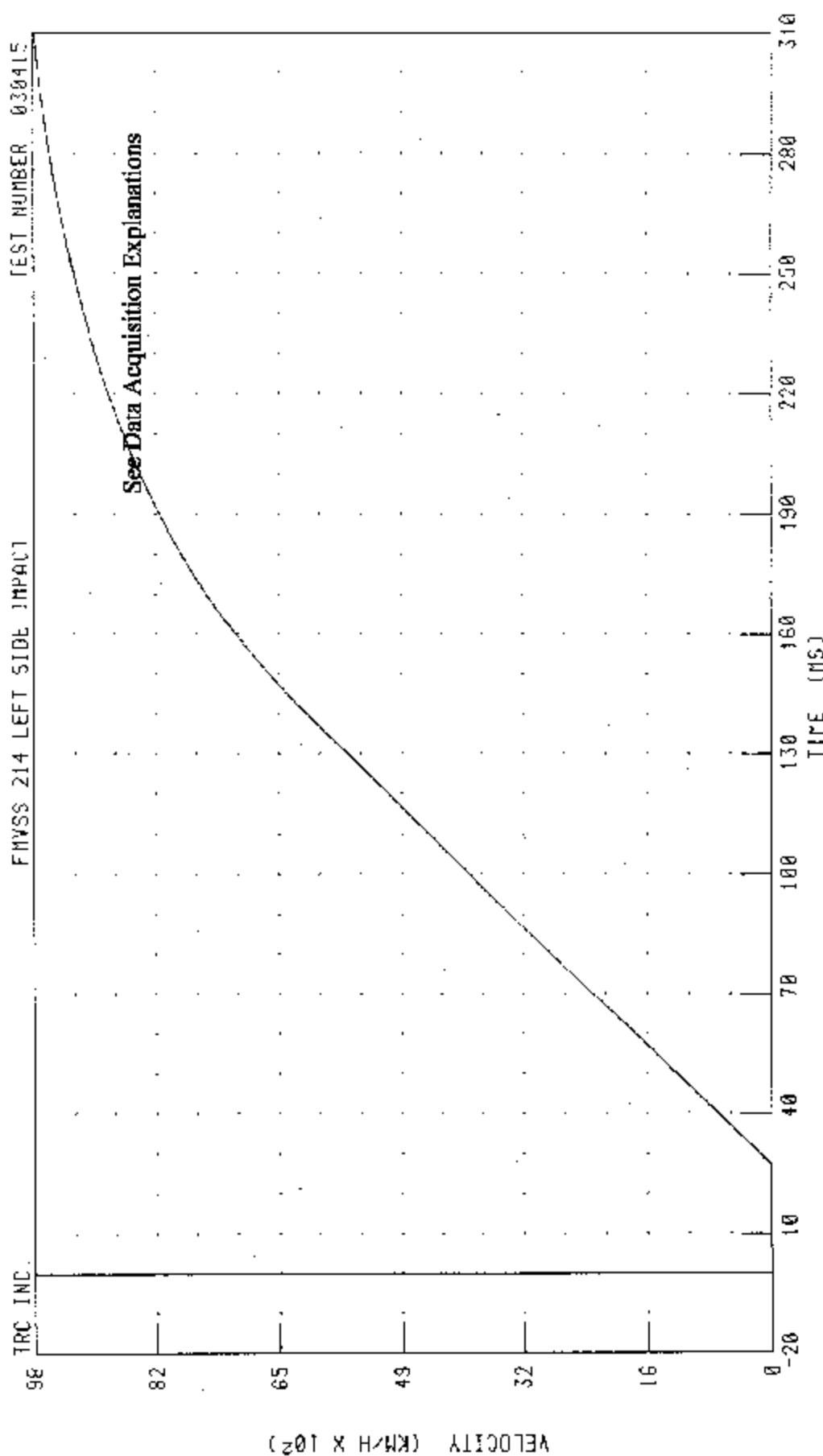
PEAK DATA 1608 97 G @ 31.60 MS, -63.34 G @ 23 20 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT MINIMUM A-POST Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

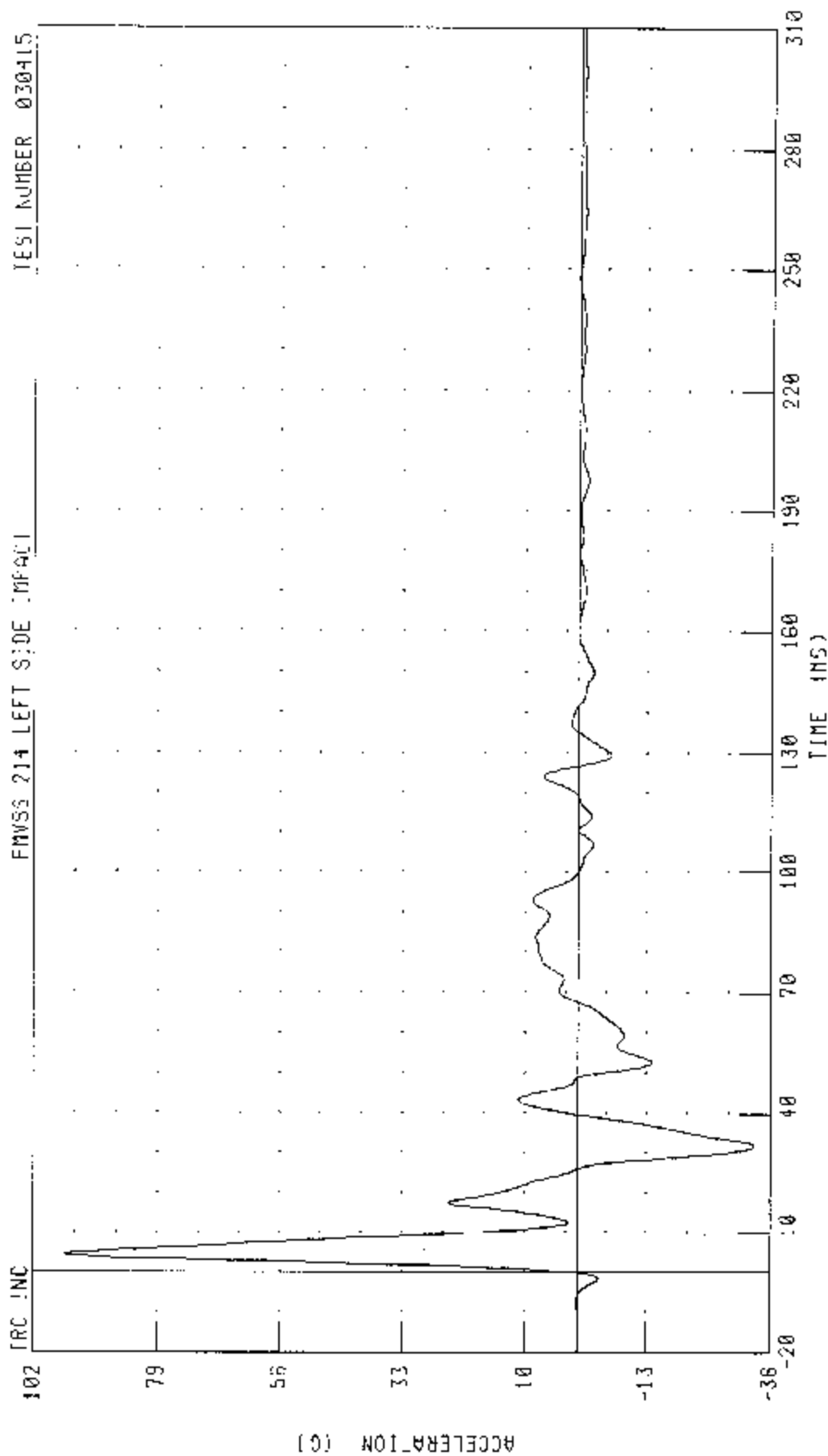


CHANNEL LMAYV1 FILTER CH. CLASS 180 PEAK DATA: 9858 09 KM/H @ 310 00 MS; -0 08 KM/H @ 1 04 MS

030415

55/28 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT LOWER B-POST Y-AXIS ACCELERATION



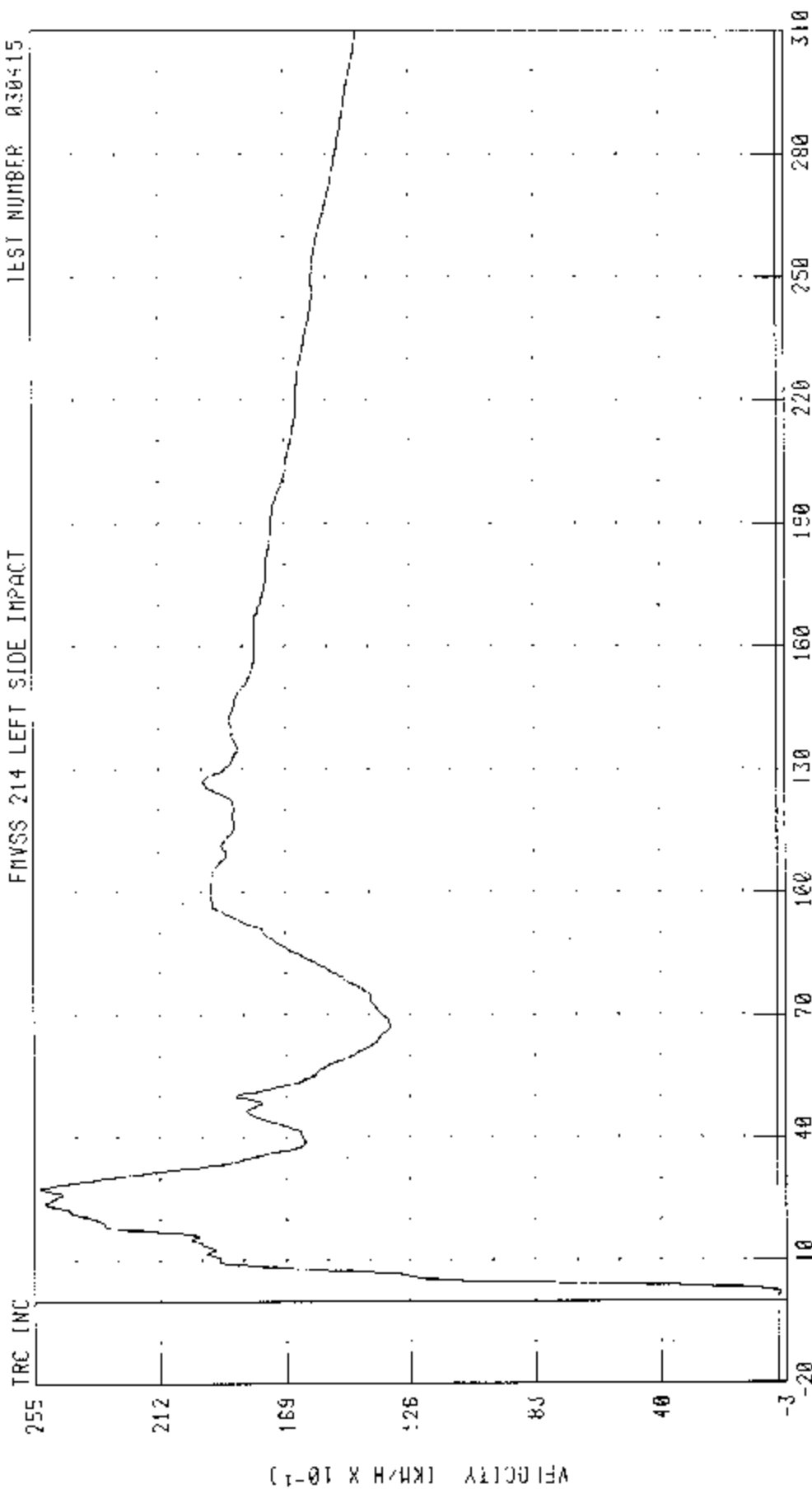
CHANNEL: LLBY61 FILTER: CH. CLASS 00

PEAK DATA: 96.01 G @ 4.48 MS; -32.83 G @ 31.84 MS

55/28 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER (INTG LEFT SIDE OF 2003 SUBARU LEGACY)

LEFT LOWER B-POST Y-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



TIME (MS)

PEAK DATA 25 30 KM/H @ 27.76 MS; -0 13 <M/H @ 2 00 MS

CHANNEL: LLBYV1 FILTER: CH CLASS 1B0

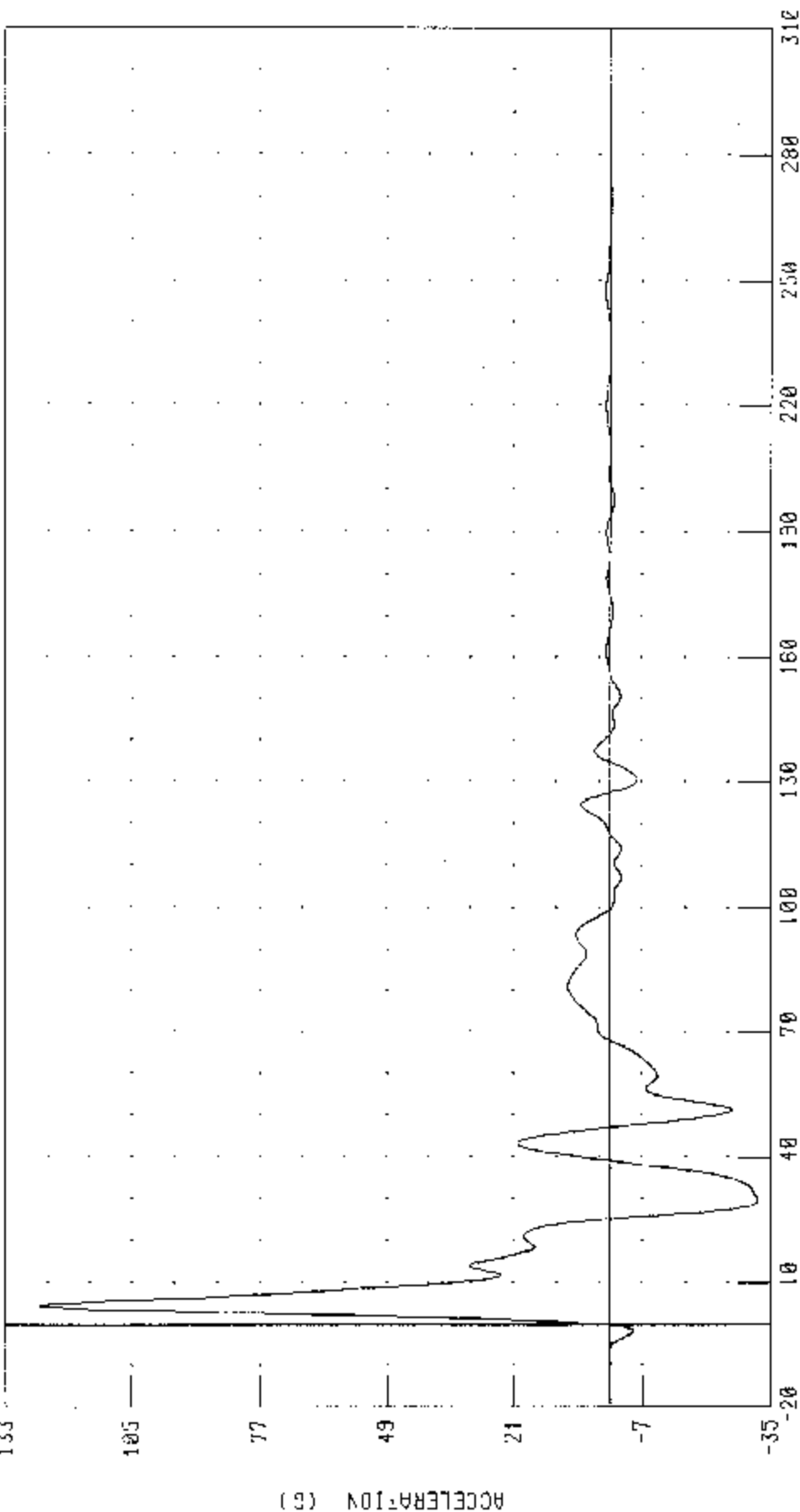
55/20 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARrier INITI SIDE OF 2003 SUBARU LEGACY

LEFT MIDDLE B-POST Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

TRC INC.



TIME (MS)

CHANNEL LM8Y01 FILTER CH CLASS 60

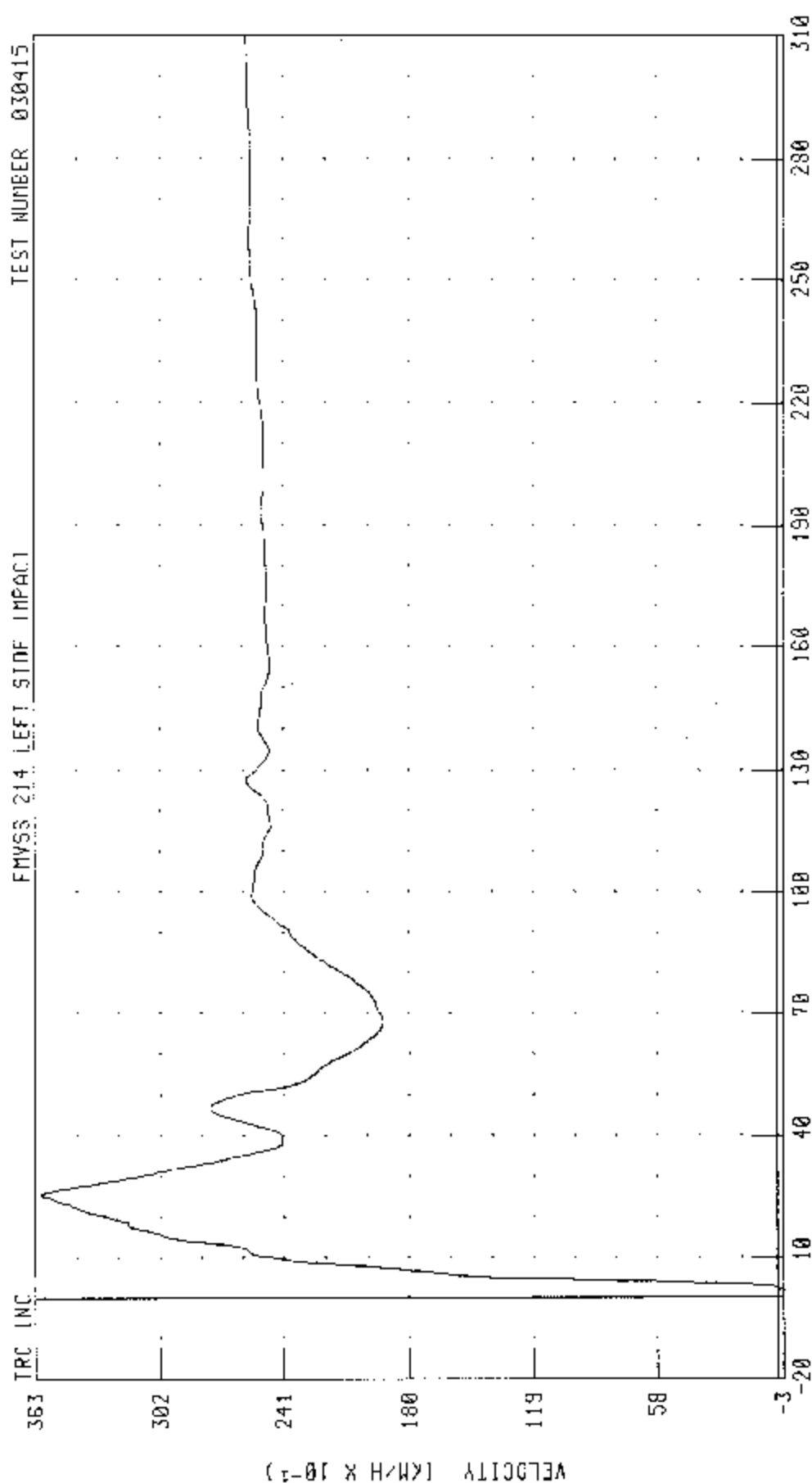
PEAK DATA: 125.48 G @ 4.48 MS; -32.25 G @ 29.76 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUZUKI LEGACY

LEFT MIDDLE R-POST Y-AXIS VELOCITY

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



TIME (MS)

CHANNEL LMBYV1 FILTER: CH CLASS 180

PEAK DATA 36.02 KM/H @ 25.60 MS, -0.16 KM/H @ 2.08 MS

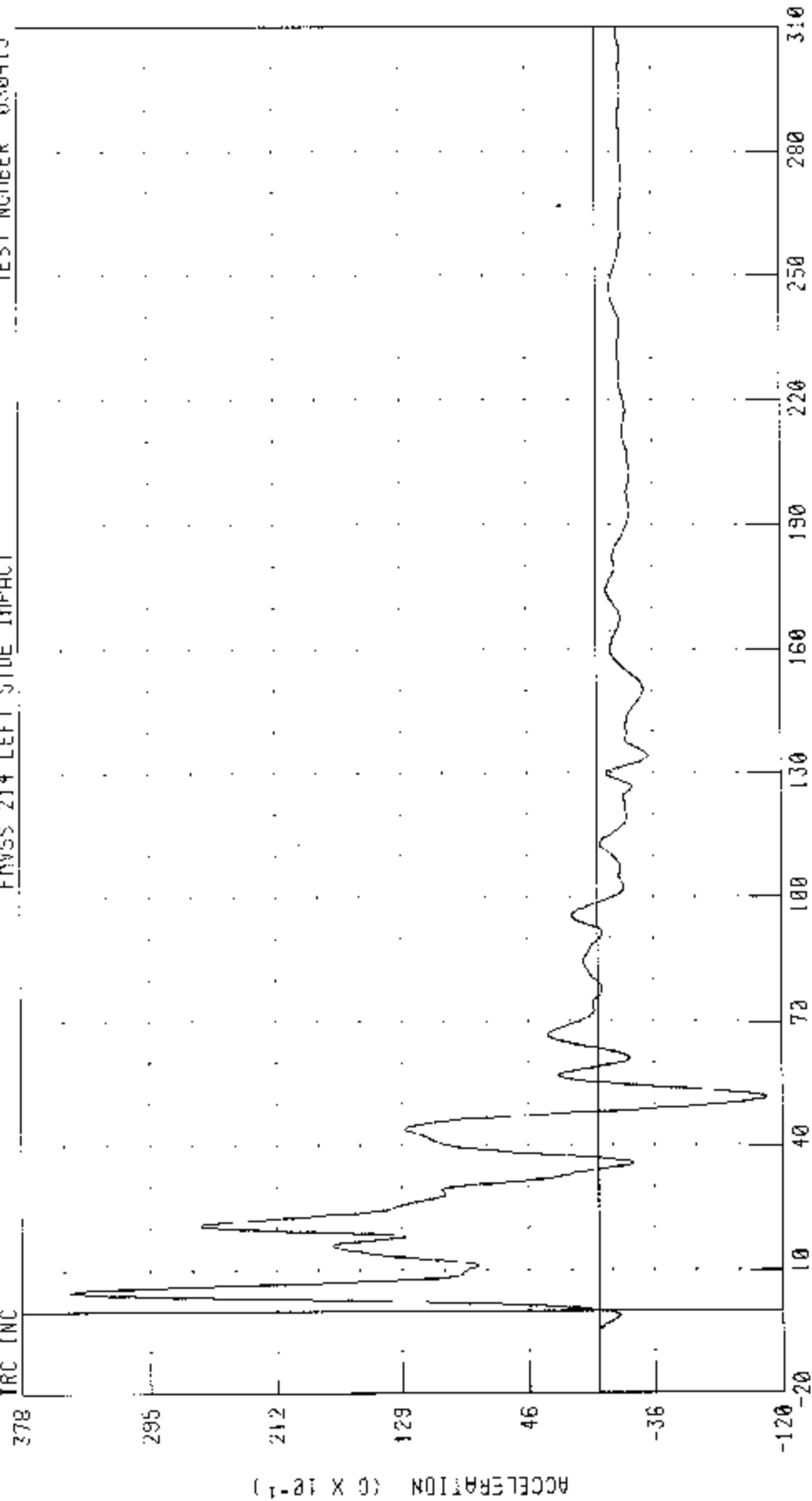
55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT FRONT SENT IRON Y-AXIS ACCELERATION

TEST NUMBER 030415

TRC INC

FNVS 214 LEFT SIDE IMPACT



CHANNEL: LEFTYGI FILTER: CH CLASS 60

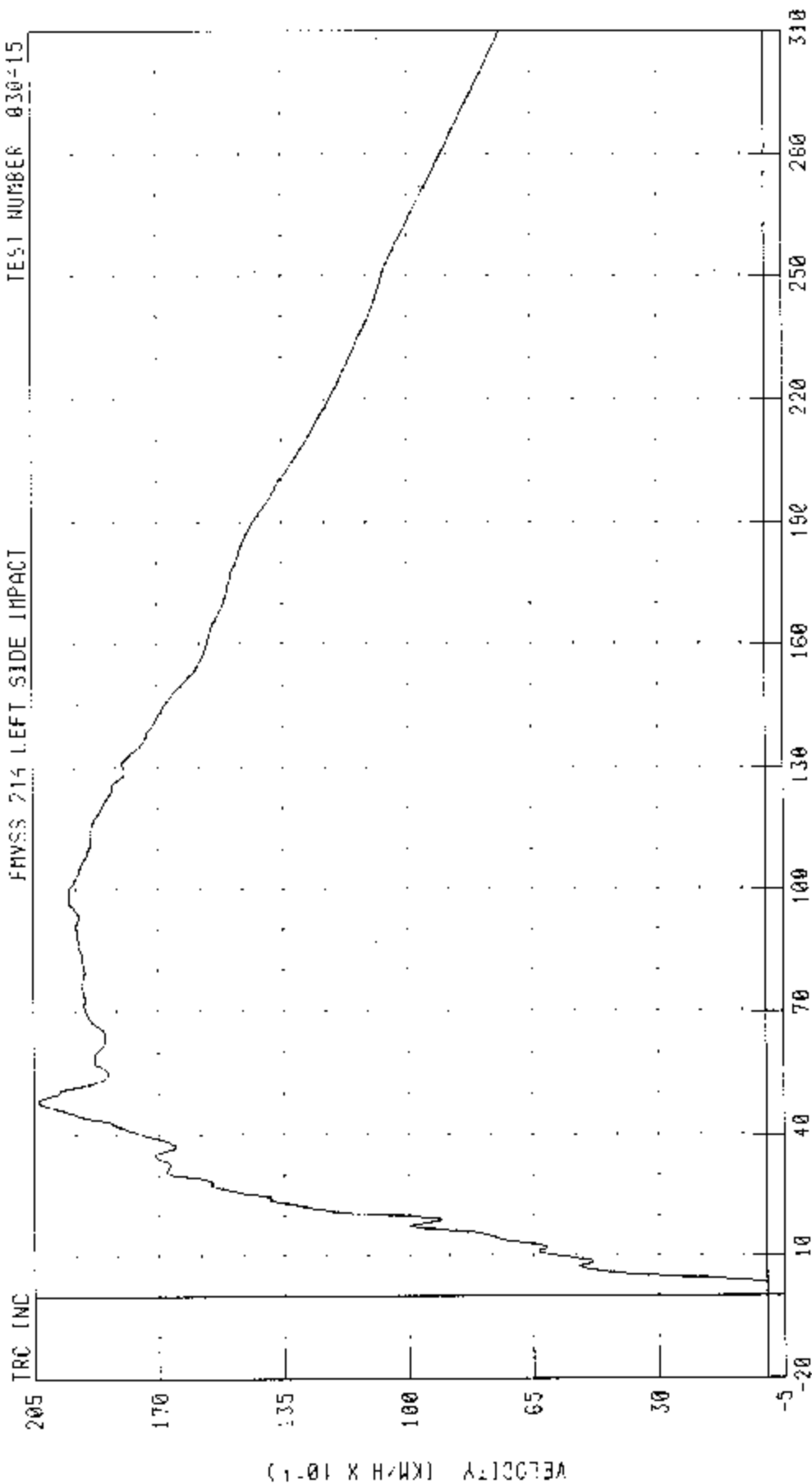
TIME (MS)

PEAK DATA: 34.66 C @ 4.80 MS; -10.95 G @ 51.60 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE CARRIER) INTO LEFT SIDE OF 2003 SUARRO IFCALY

LEFT FRONT SEAT TRACK Y AXIS VELOCITY

PHYSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



TIME (MS)

PEAK DATA: 20 36 KM/H @ 48 16 MS, -0.03 KM/H @ 2.56 MS

CHANNEL: LFTYV1 FILTER: CH CLASS 180

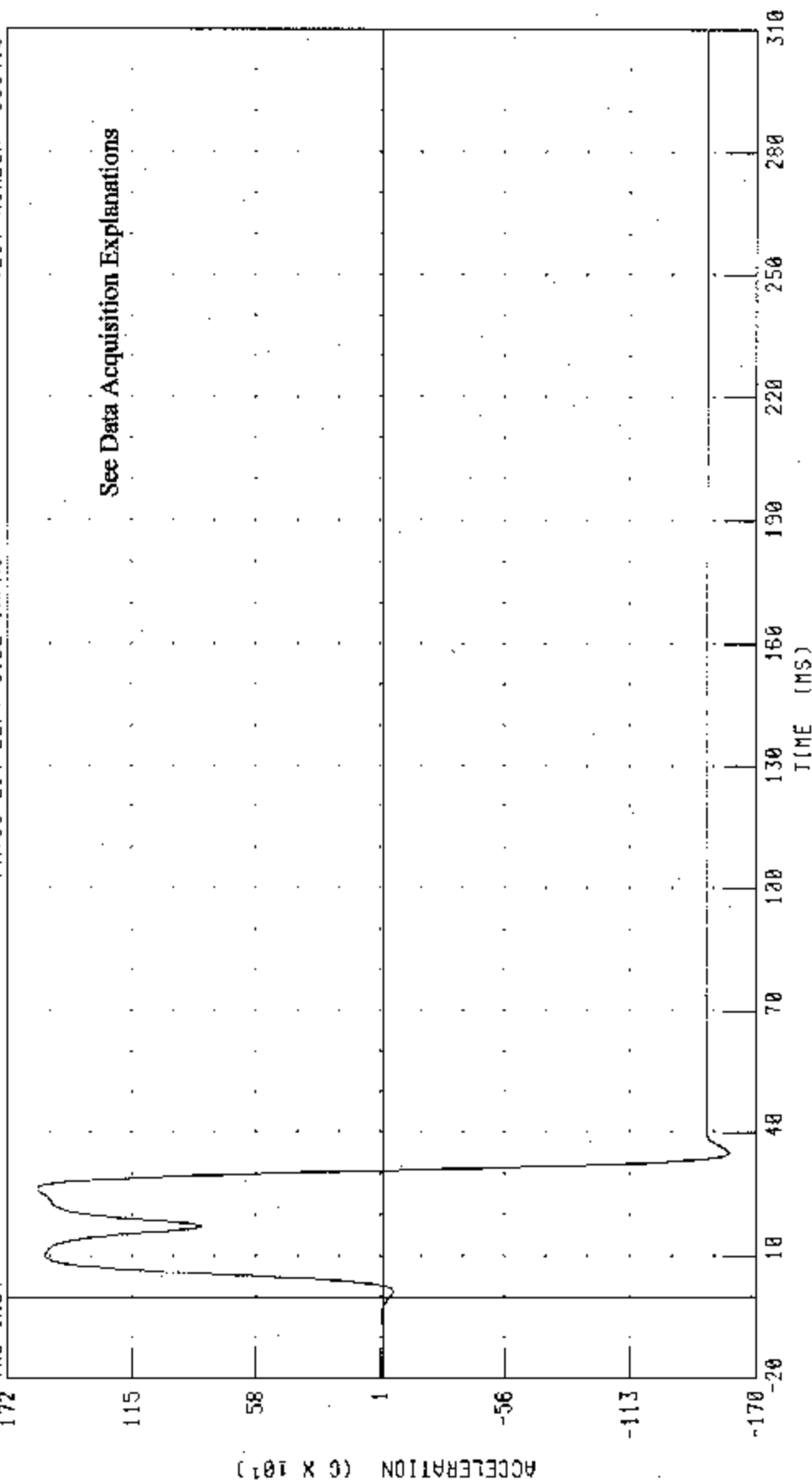
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR SEAT FRACK Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415

TRC INC.



CHANNEL: LRTYGI FILTER: CH. CLASS 60

PEAK DATA: 1583.00 G @ 26.48 MS, -1580.31 G @ 35.04 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR SEAT TRACK Y-AXIS VELOCITY

TRC INC

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415

See Data Acquisition Explanations

VELOCITY (KPH X 10²)

TIME (MS)

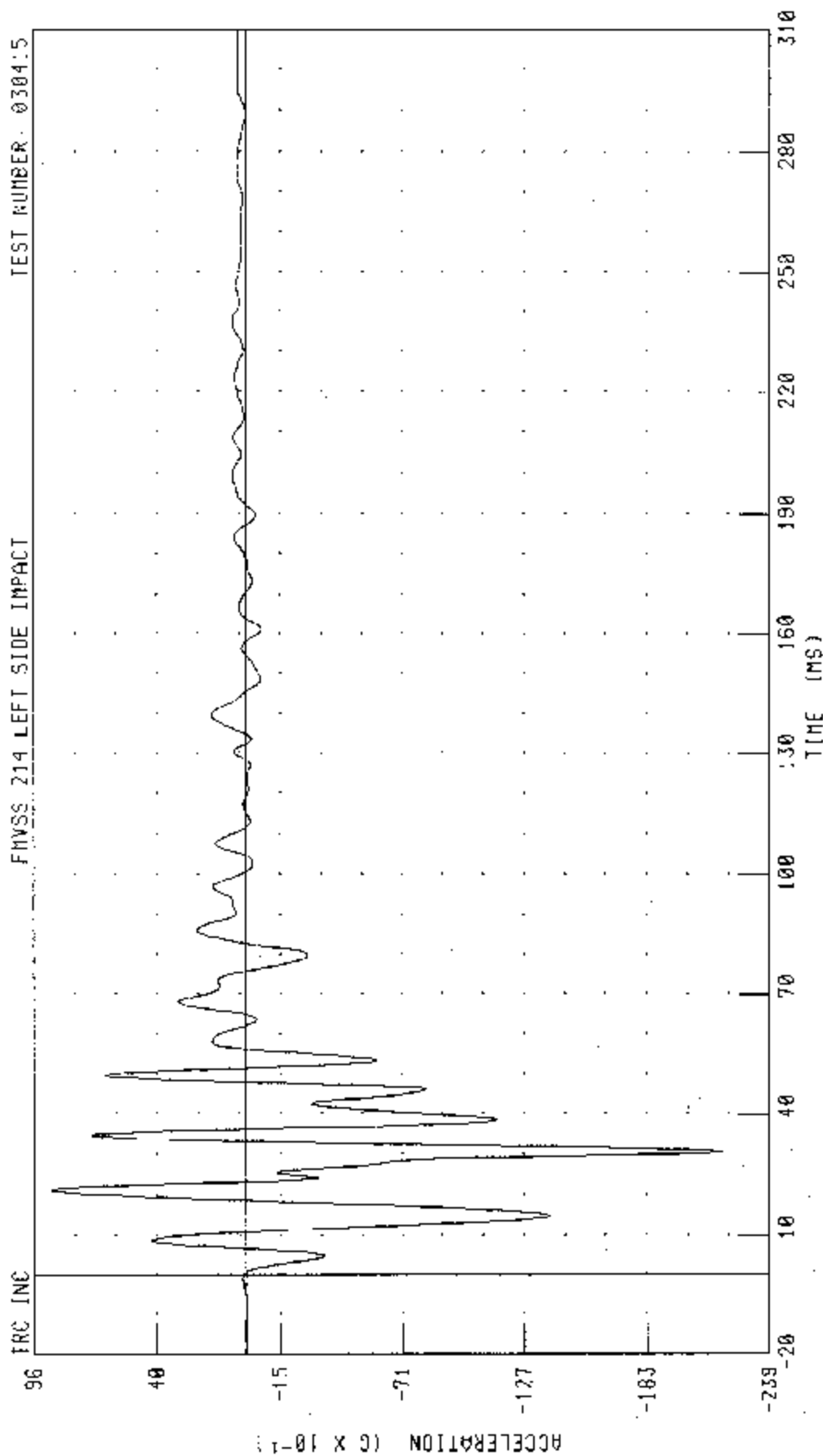
CHANNEL: LRTYV

FILTER CH: CLASS 180

PEAK DATA: 1218.56 KPH @ 30.80 MS, -13363.00 KPH @ 310.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 VEHICLE CENTER OF GRAVITY X-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415

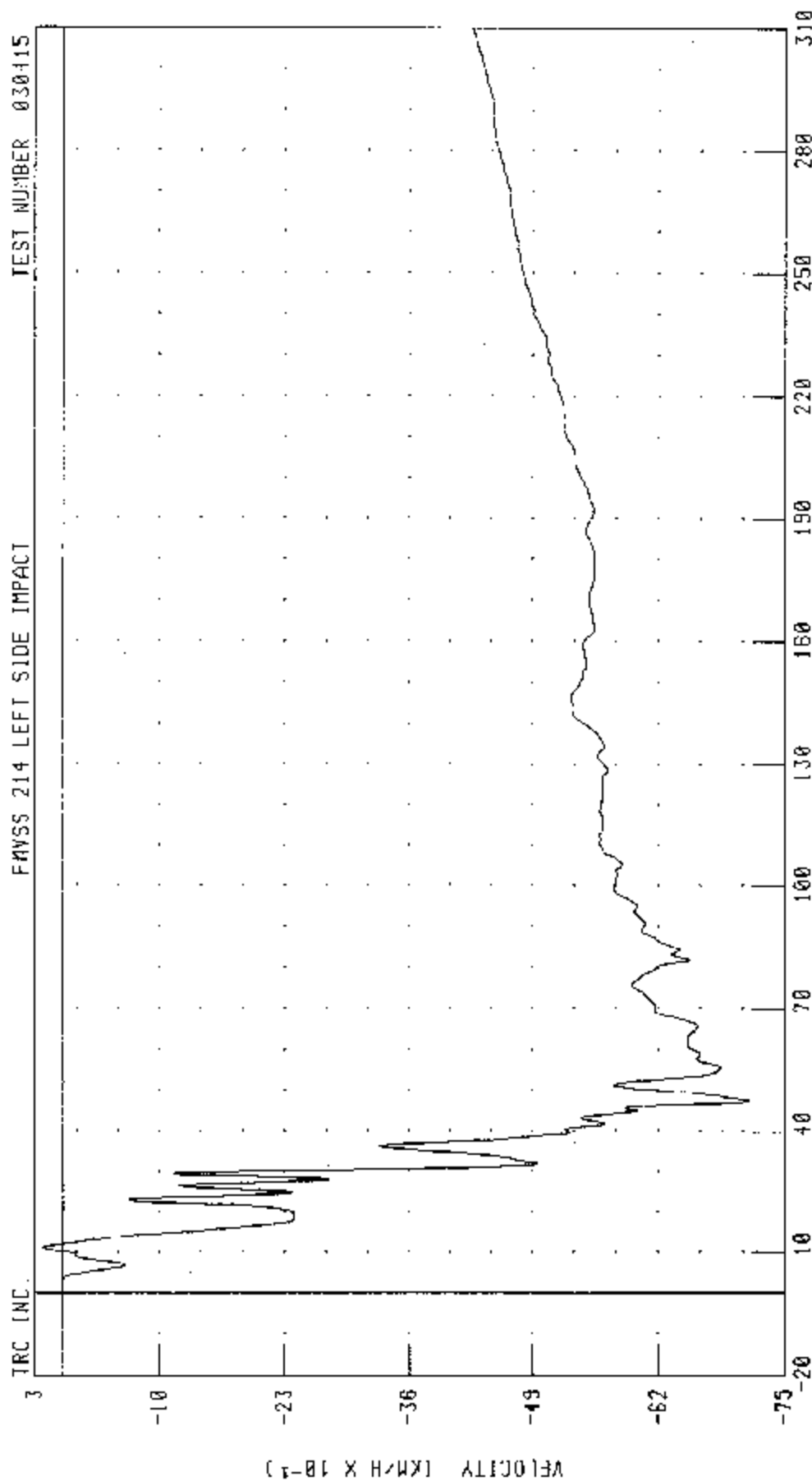


CHANNEL: VCCXG1 FILTER: CH. CLASS 60 PEAK DATA: 8.80 G @ 21.36 MS; -21.86 G @ 30.64 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

VEHICLE CENTER OF GRAVITY X-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



TIME (MS)

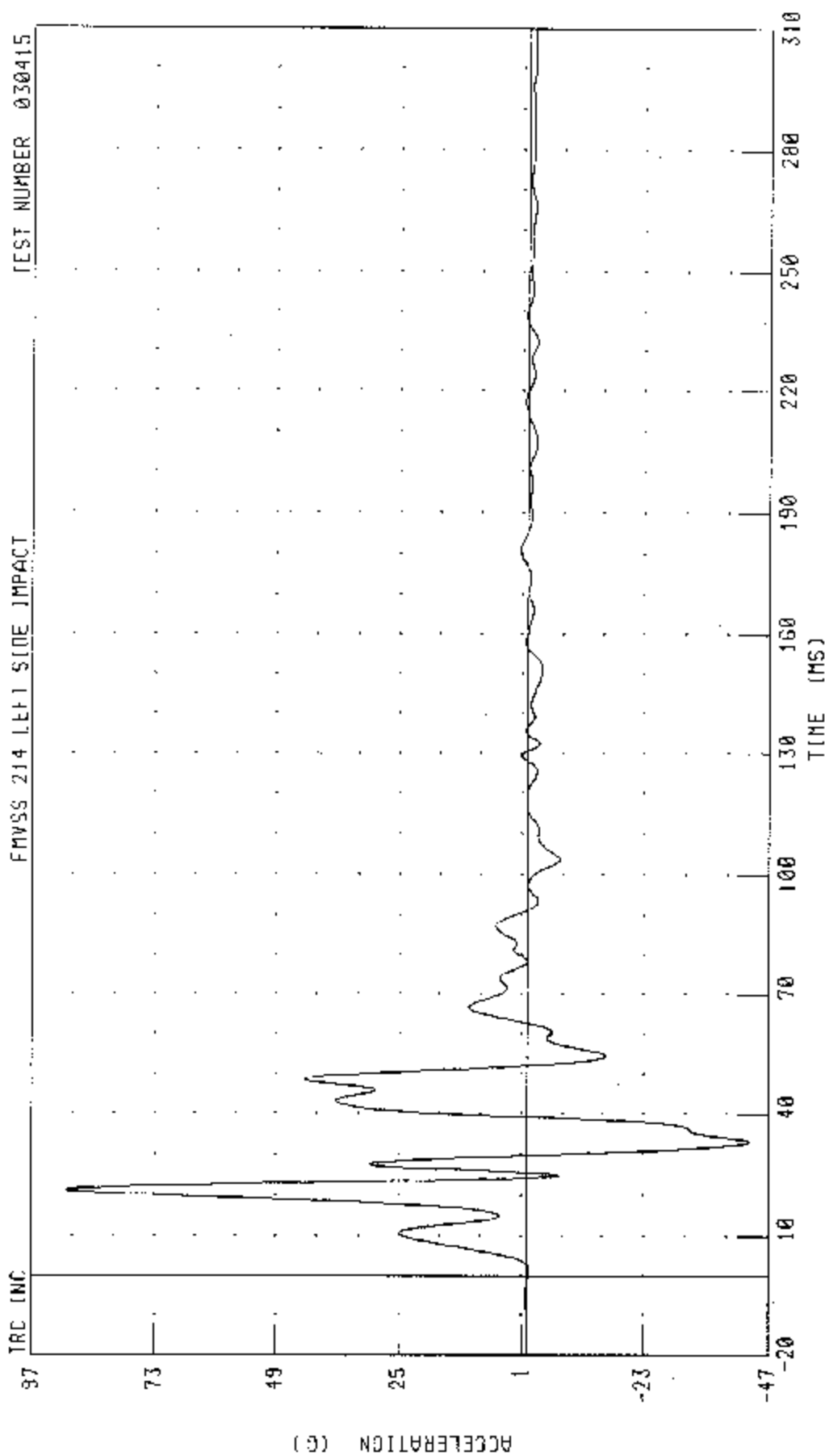
CHANNEL: VCGXV1 FILTER: CH. CLASS: 180

PEAK DATA 0.21 KM/H @ 11.20 MS; -7.13 KM/H @ 17.44 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 VEHICLE CENTER OF GRAVITY Y-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT



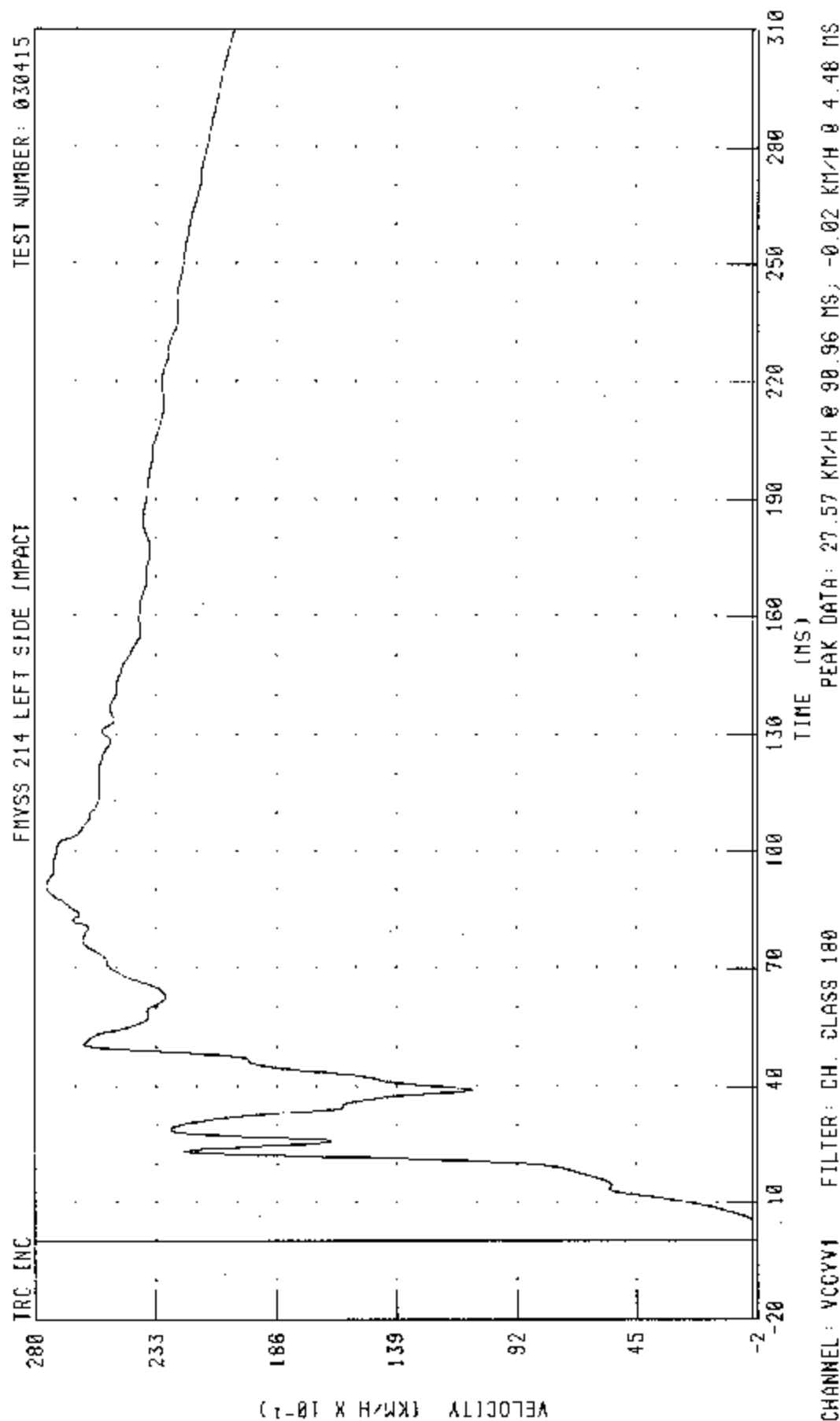
CHANNEL: VCCY01

FILTER: CH CLASS 60

PEAK DATA 90 19 G @ 21 44 MS, -43.38 G @ 33.20 MS

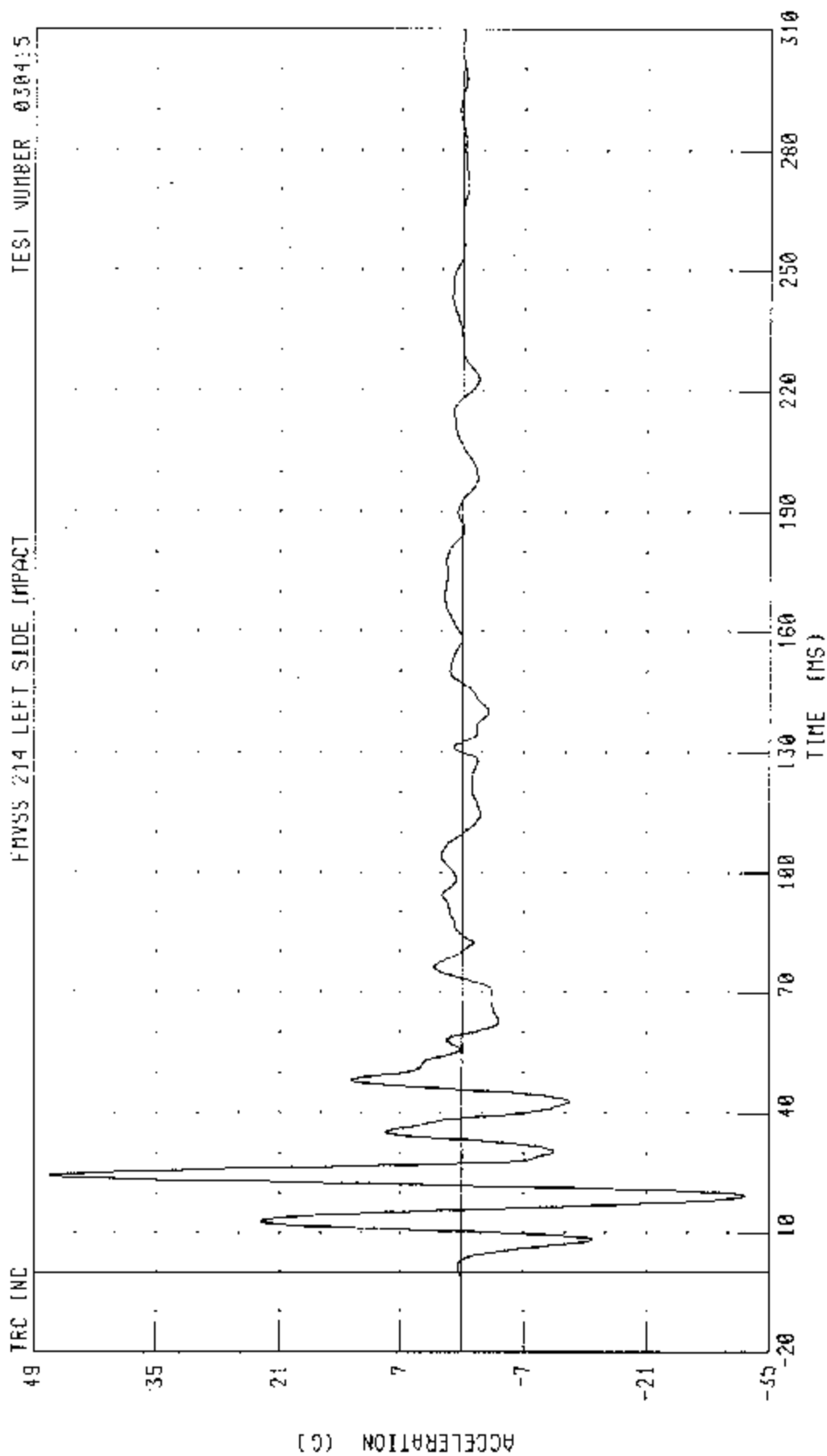
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

VEHICLE CENTER OF GRAVITY Y-AXIS VELOCITY



55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

VEHICLE CENTER OF GRAVITY Z-AXIS ACCELERATION



CHANNEL: VCGZG1 FILTER: CH. CLASS 60

PEAK DATA: 47.31 G @ 24.64 MS; -32.16 G @ 19.44 MS

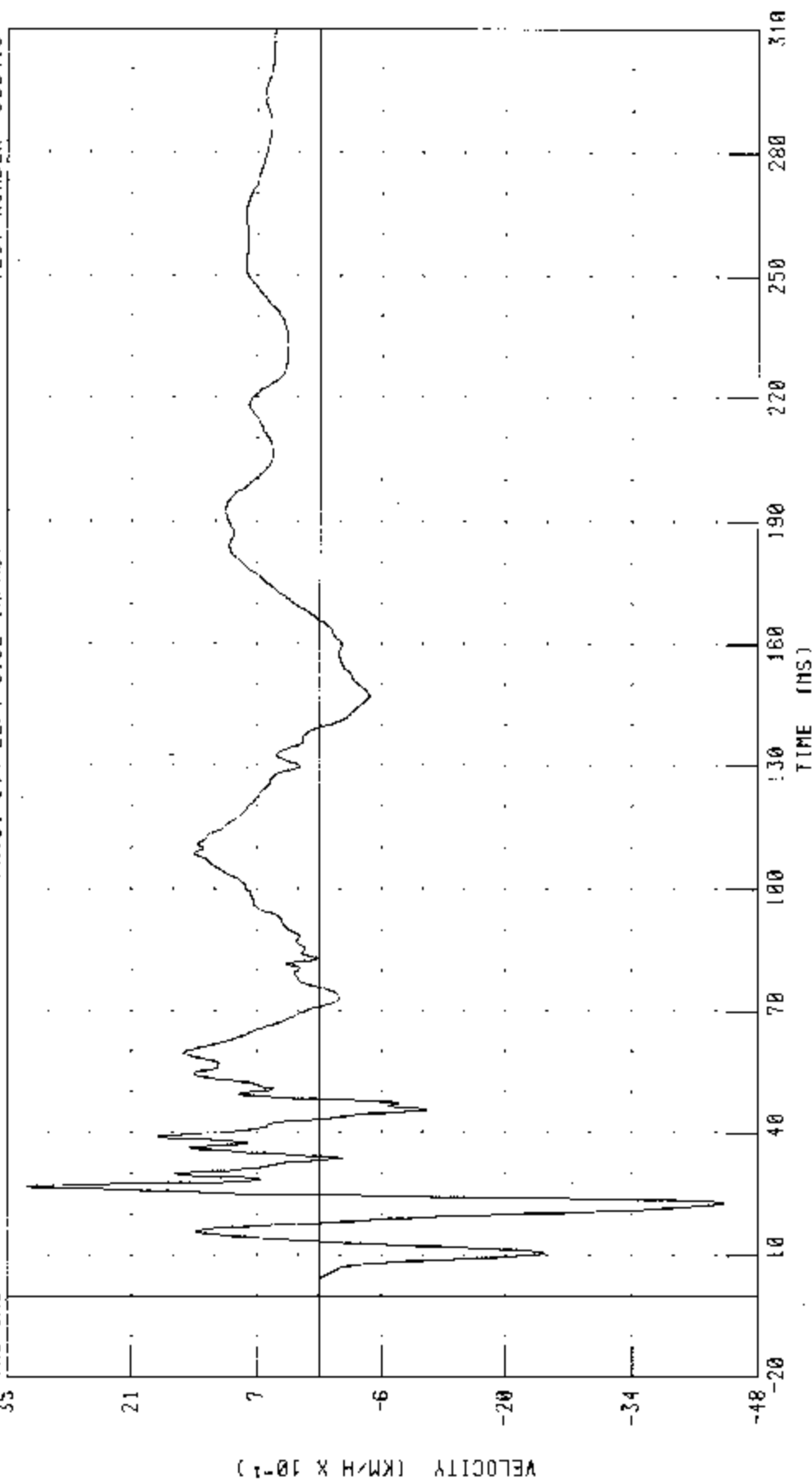
55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

VEHICLE CENTER OF GRAVITY Z-AXIS VELOCITY

TRC INC

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



CHANNEL VCCZV1

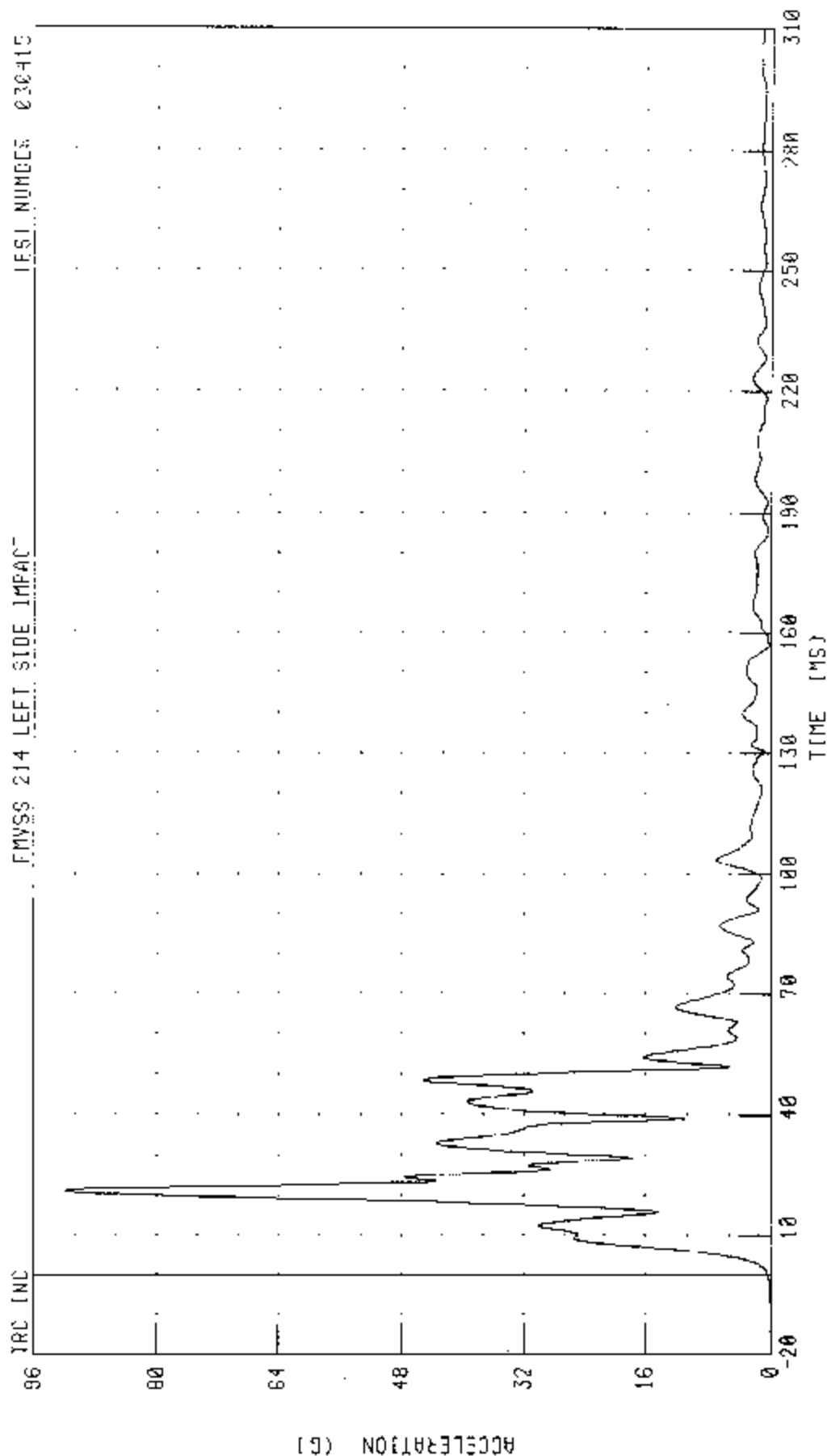
FILTER CH CLASS 180

TIME (MS)

PEAK DATA: 3.26 KM/H @ 26 96 MS, -4 52 KM/H @ 22 96 MS

55-20 KPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION



CHANNEL VCCRC1 FILTER: CH. CLASS 60

PEAK DATA 91.80 G @ 21.28 MS, 0.01 G @ -17.68 MS

MDB Instrumentation Plots

Acceleration Data - Filter Class 60

Integration Data - Filter Class 180

Contact Data - Filter Class 1000

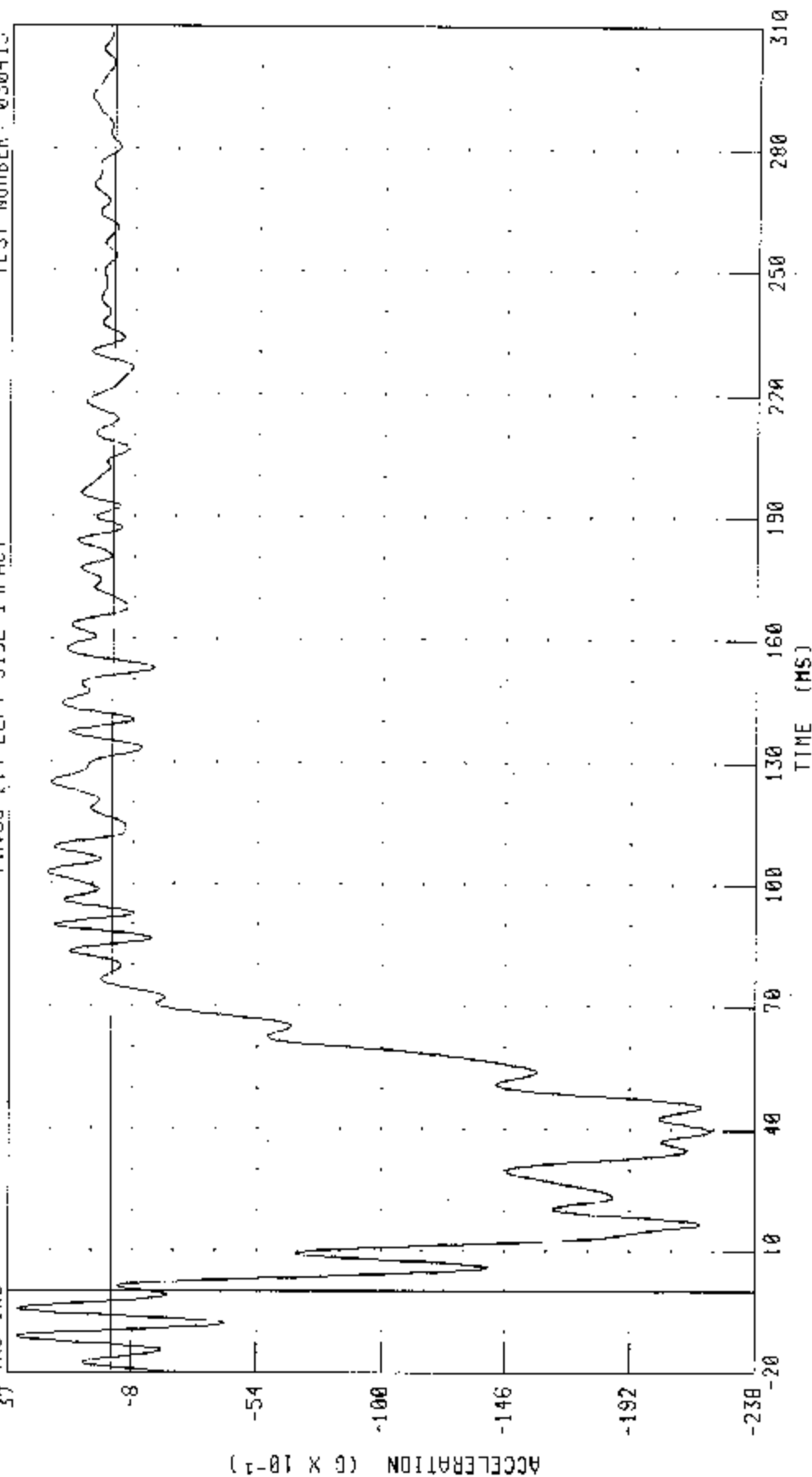
55/28 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER (MDO LEFT SIDE OF 2003 SUBARU LEGACY

HUB CENTER OF GRAVITY X-AXIS ACCELERATION

IRC INC

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415



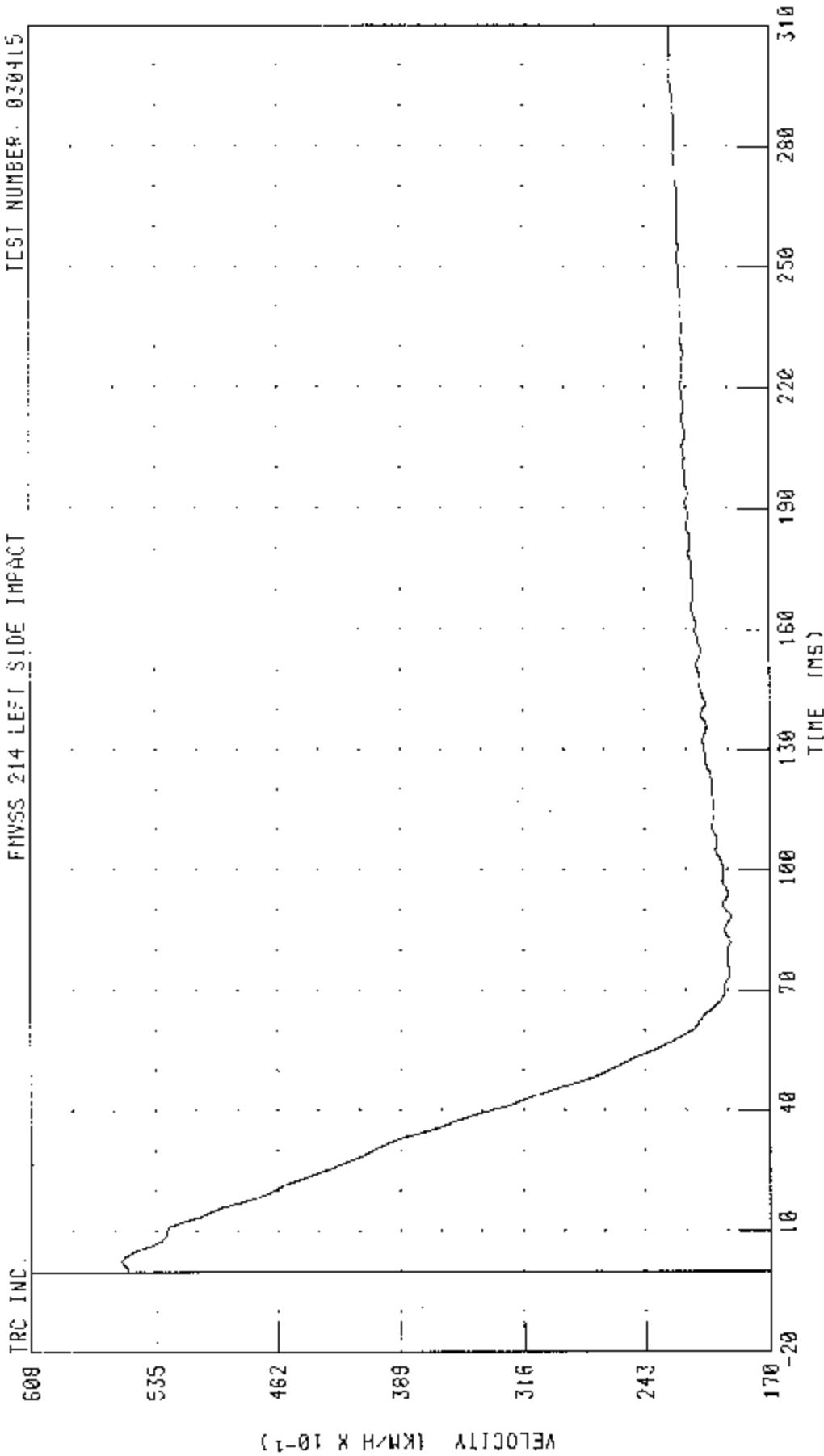
CHANNEL BCCXG1 FILTER: CH. CLASS 60

PEAK DATA: 3.47 G @ -11.20 MS, -22.15 G @ 39.84 MS

55/28 KPH 90 DEGREE SIDE IMPACT - MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY

NDB CENTER OF GRAVITY X-AXIS VELOCITY

TRC INC. FNVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415



CHANNEL: BCGXV1 FILTER: CH CLASS: 180 PEAK DATA: 55.51 KM/H @ 2.80 MS, 19.23 KM/H @ 88.32 MS

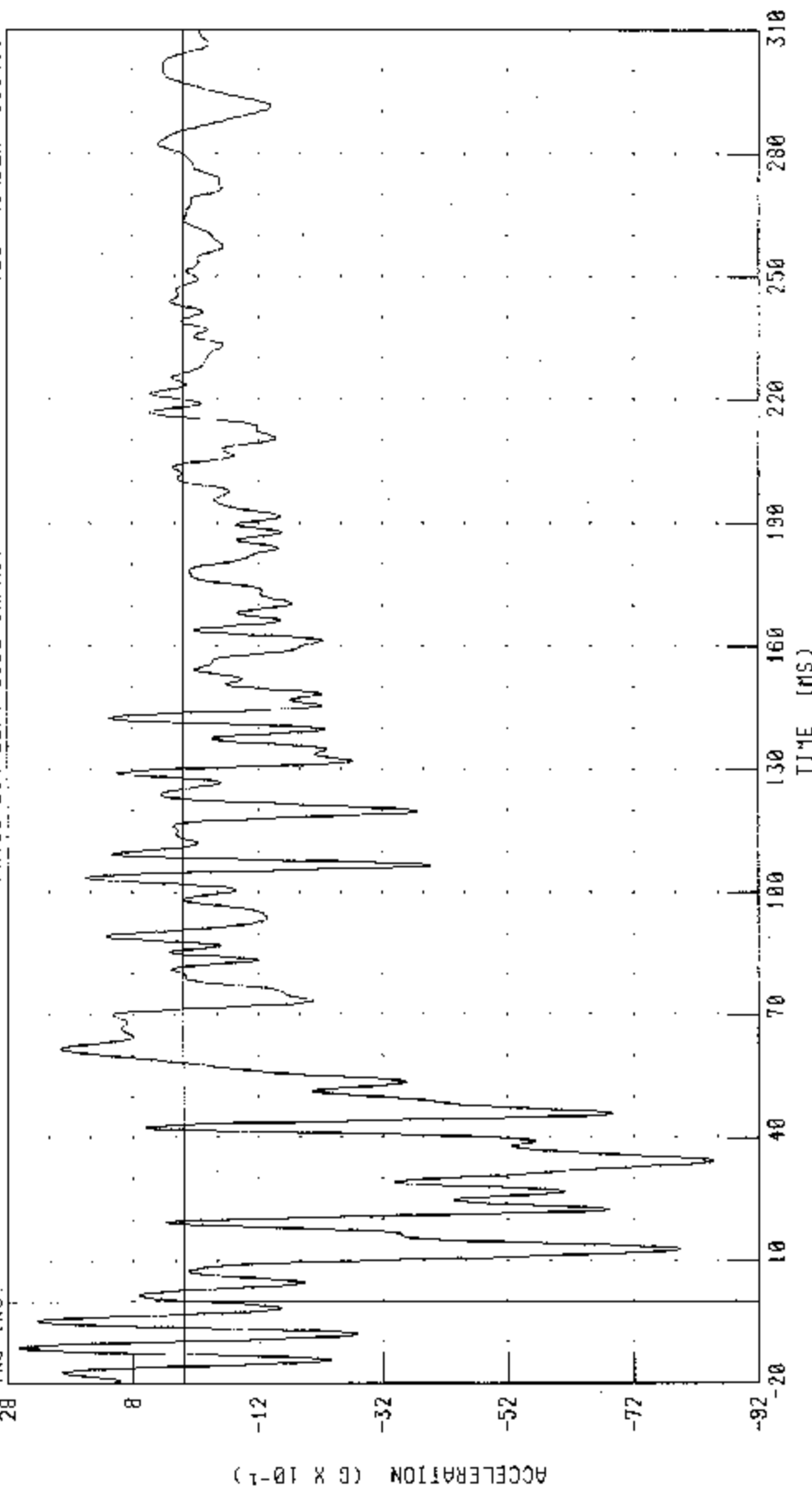
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

MIR CENTER OF GRAVITY Y-AXIS ACCELERATION

TEST NUMBER 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC.



CHANNEL: BCGYG1

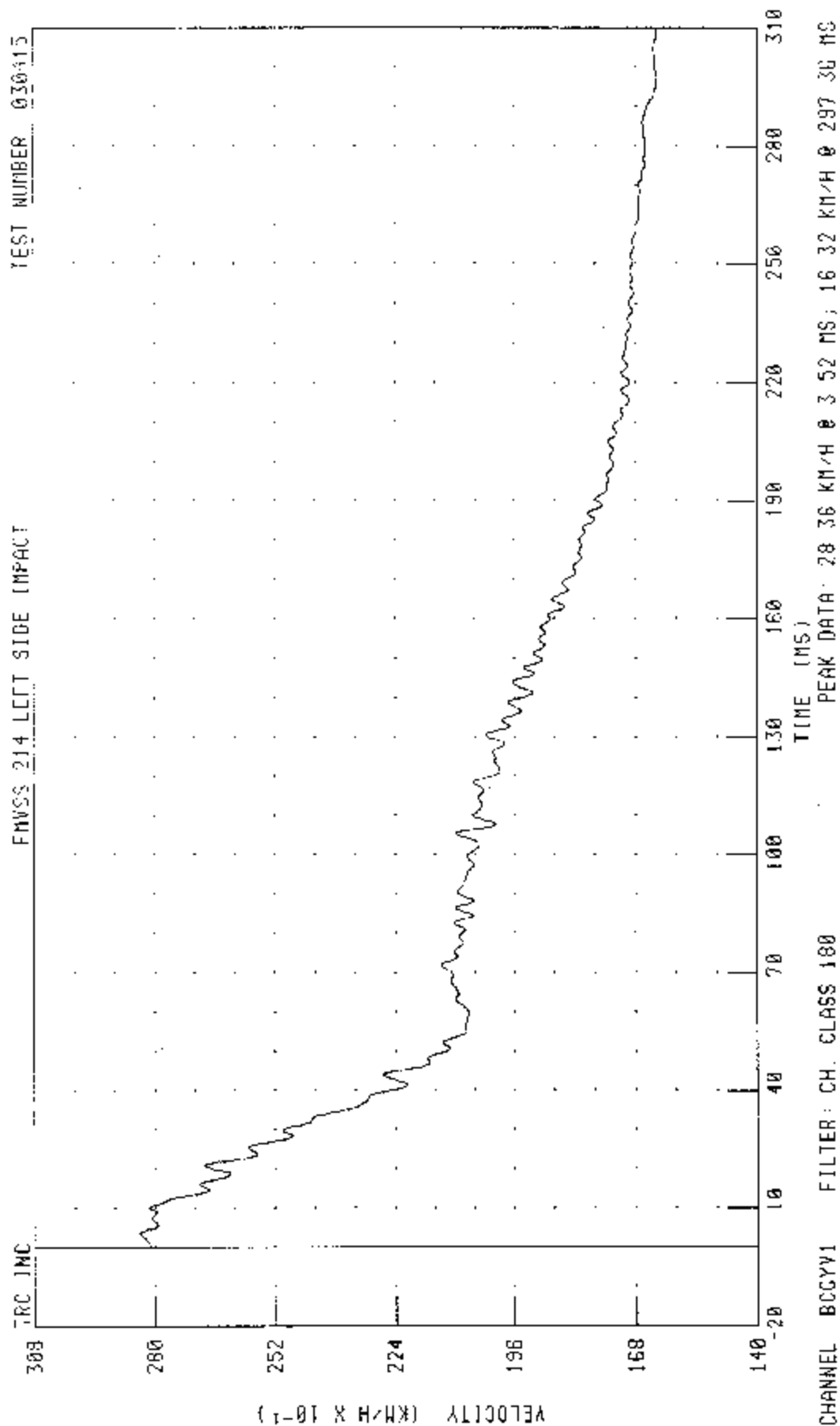
FILTER: CH. CLASS 60

TIME (MS)

PEAK DATA: 2.62 G @ -11.28 MS; -8.48 G @ 34.40 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) IN'D LEFT SIDE OF 2003 SUBARU LEGACY

HICR CENTER OF GRAVITY Y-AXIS VELOCITY



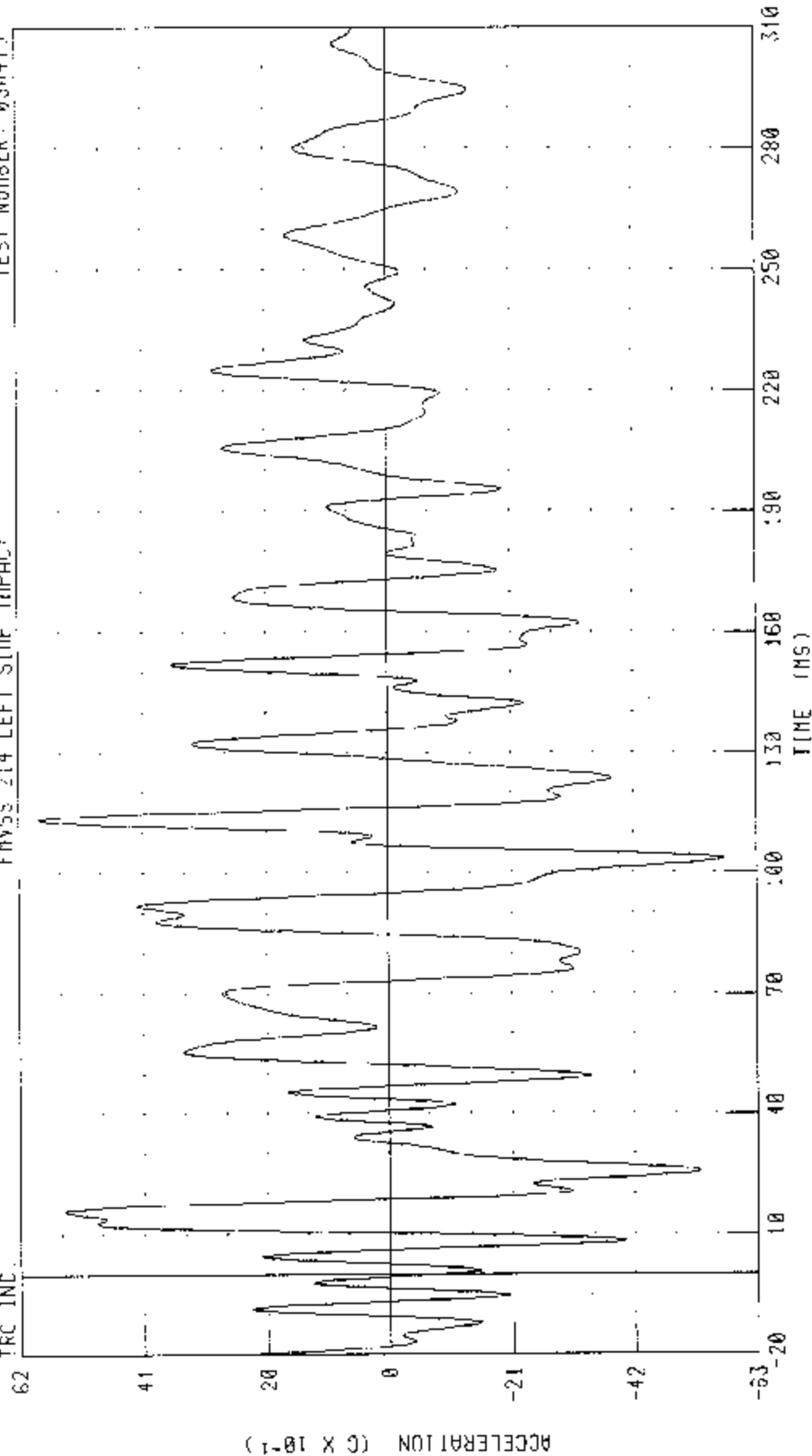
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DETECTABLE BARRIER) INFO LEFT SIDE OF 2003 SUBARU LEGACY

MOB CENTER OF GRAVITY Z-AXIS ACCELERATION

TEST NUMBER: 030415

FMVSS 214 LEFT SIDE IMPACT

TRC INC



PEAK DATA: 5.97 G @ 113.28 MS, -5.75 G @ 103.52 MS

CHANNEL BCC2G1 FILTER CH CLASS 60

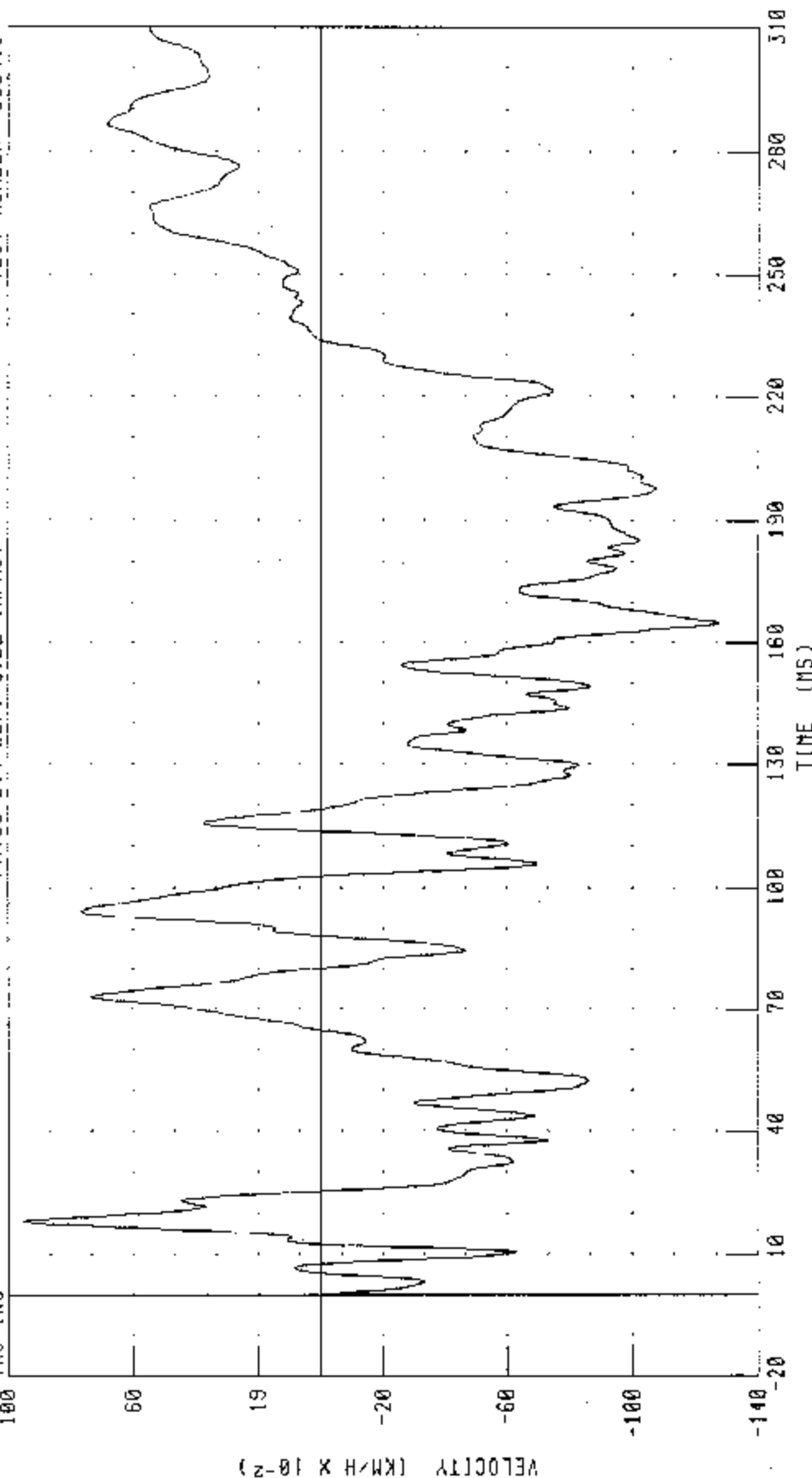
55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) (NIO LEFT SIDE OF 2003 SUBARU LEGACY

MOB CENTER OF GRAVITY 7-AXIS VELOCITY

IRC INC

FMVSS 214 LEFT SIDE IMPACT

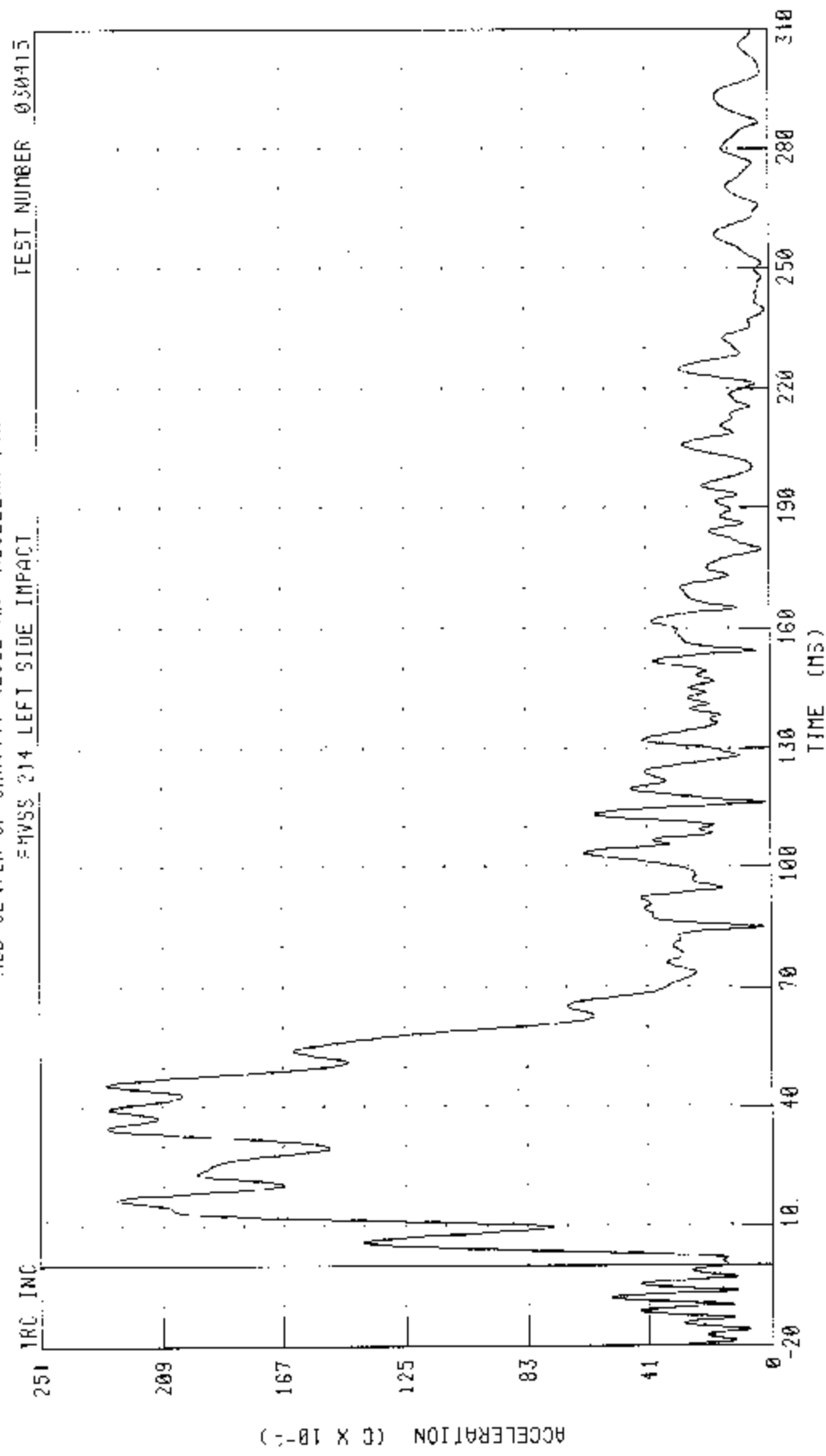
TEST NUMBER 030415



CHANNEL: BCCZV1 FILTER CH. CLASS 180

PEAK DATA 0.95 KM/H @ 18.24 MS, -1.27 KM/H @ 164.96 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 100 CENTER OF GRAVITY RESULTANT ACCELERATION



CHANNEL: BUCRG1 FILTER: CH. CLASS: 60 PEAK DATA: 22.93 G @ 45.76 MS; 0.14 G @ 239.84 MS

55/28 MPH 90 DEGREE STDF IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

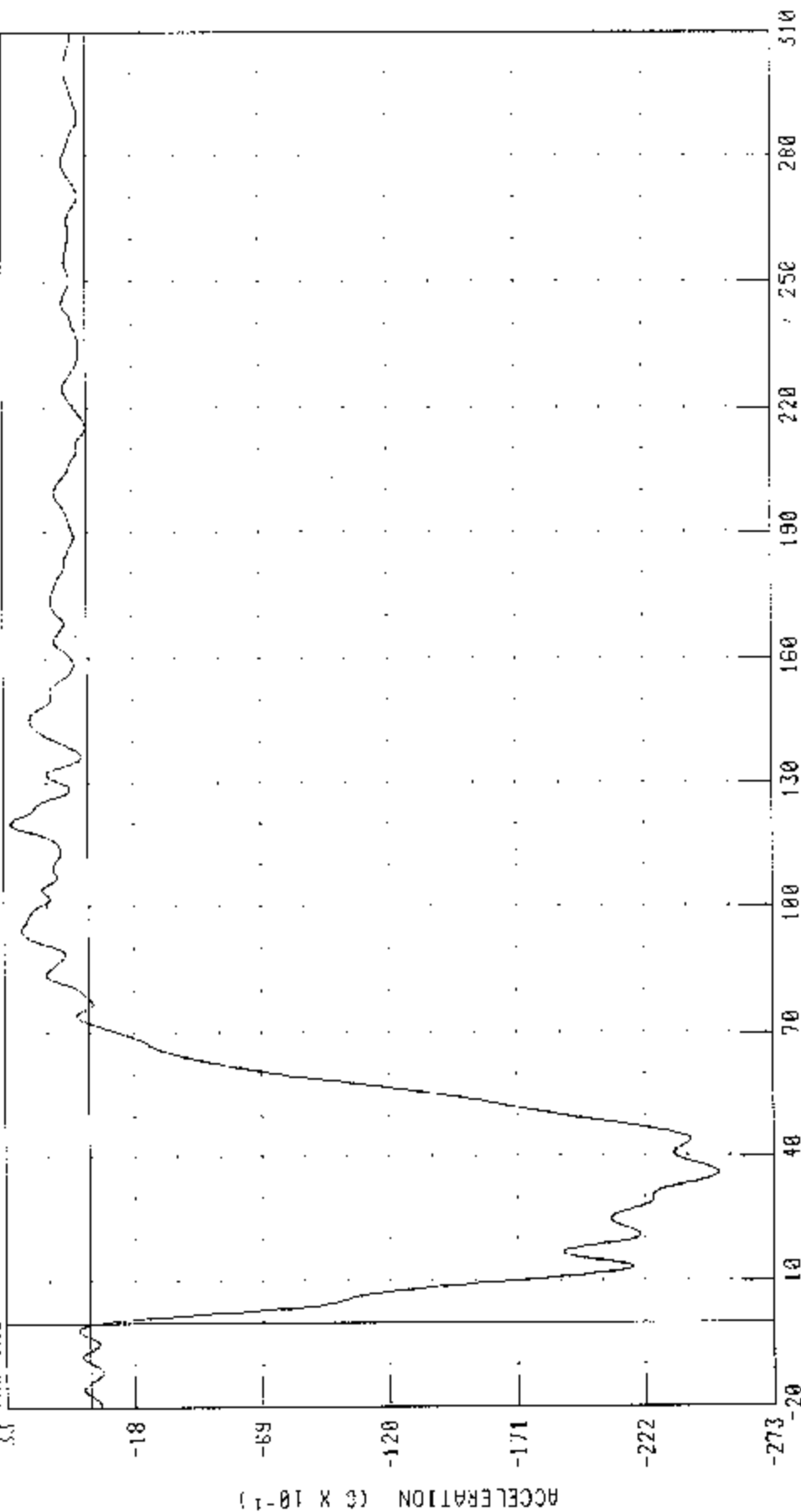
NO3 LEFT REAR X-AXIS ACCELERATION

TEST NUMBER 030415

PHYSS 214 LEFT SIDE IMPACT

TRC INC

3.1



TIME (MS)

CHANNEL LRRXG1

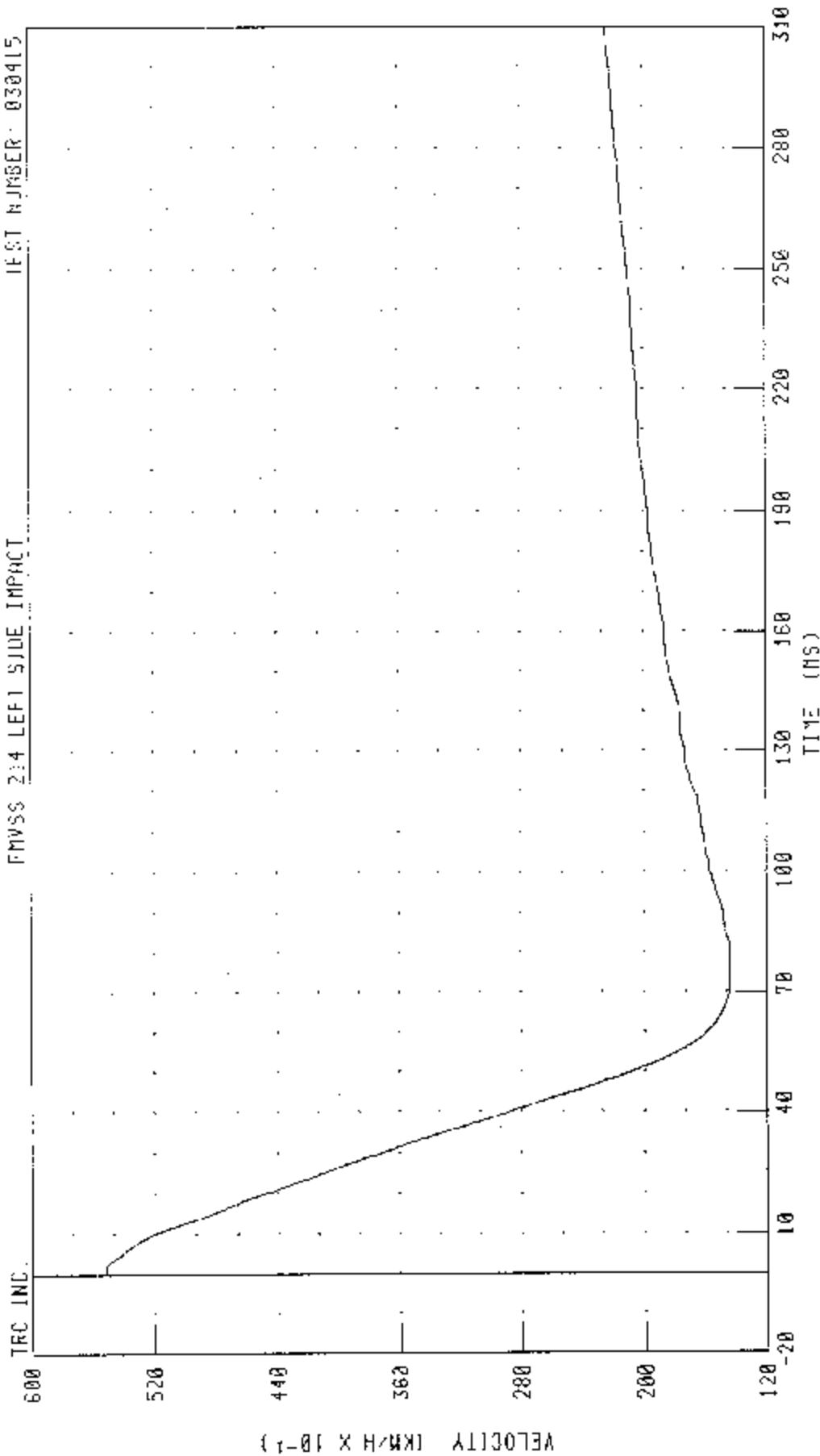
FILTER: CH. CLASS 60

PEAK DATA 3 04 0 0 120 24 MS, 25 14 G @ 36 00 MS

55.28 KPH 50 DEGREE SIDE IMPACT (MOVING DEFORMLABLE BARRIER) INTO LEFT SIDE OF 2003 GUPARU - ELACY

MC2 LEFT REAR X-AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415



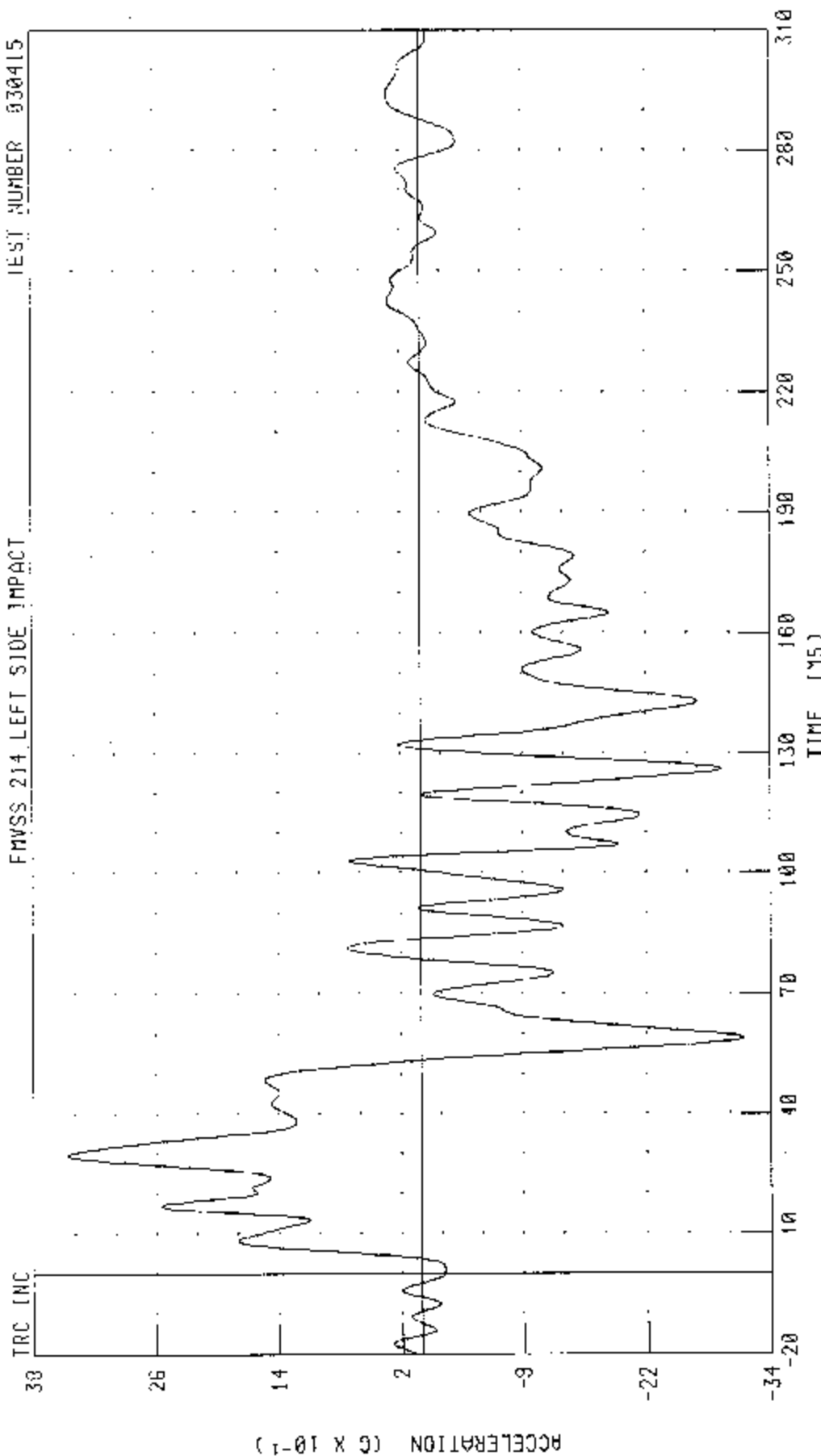
PEAK DATA: 55.28 KM/H @ 0.00 MS; 14.43 KM/H @ 72.88 MS

CHANNEL: LRRXV1 FILTER: CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

NR LEFT REAR Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



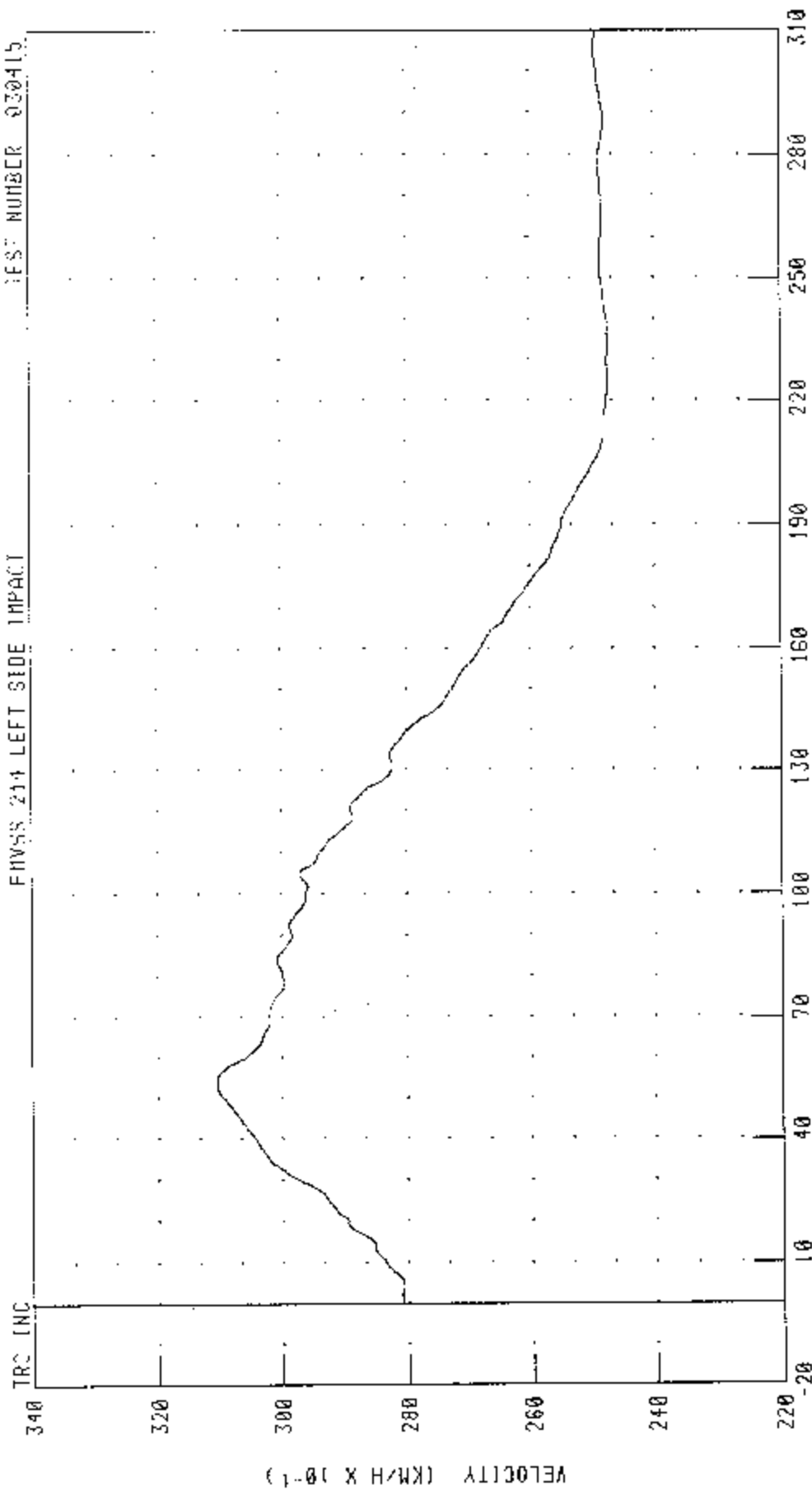
PEAK DATA: 3 47 G @ 29 76 MS, -3 13 G @ 58 96 MS

CHANNEL: LRRYG1 FILTER: CH. CLASS 60

55/20 KPH 90 DEGREE SIDE IMPACT INVOLVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU 1 F ONLY

NJB LEFT REAR Y AXIS VELOCITY

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



TIME (MS)

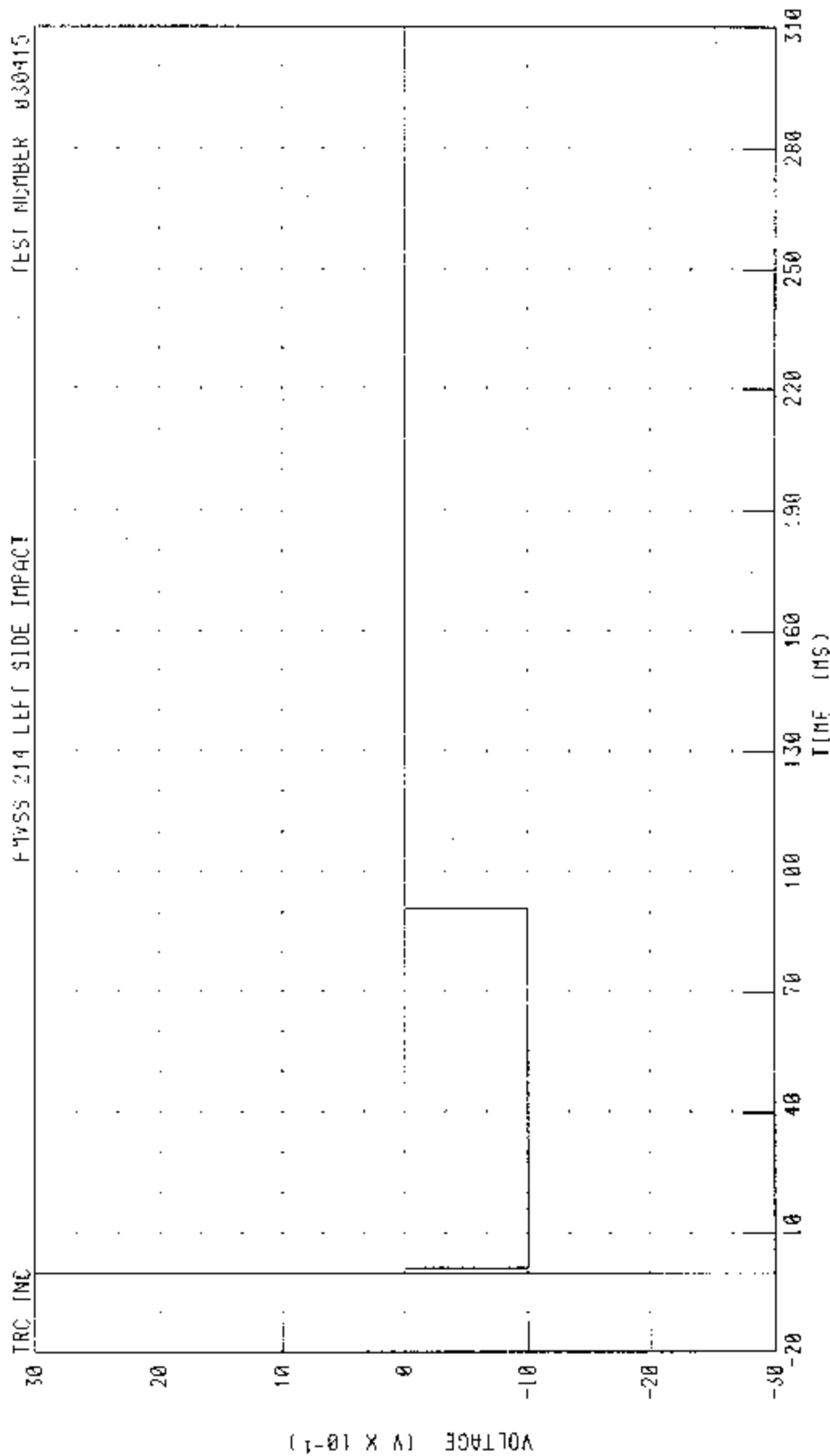
PEAK DATA: 31.05 KM/H @ 52.72 MS; 24.74 KM/H @ 225.44 MS

CHANNEL: LRRV1 FILTER: CH CLASS 180

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING) DEFORMER F BARRIER - INTO LEFT SIDE OF 2003 SUBPUL IFCACY

FOR RIGHT SIDE CONTACT SWITCH

FLVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



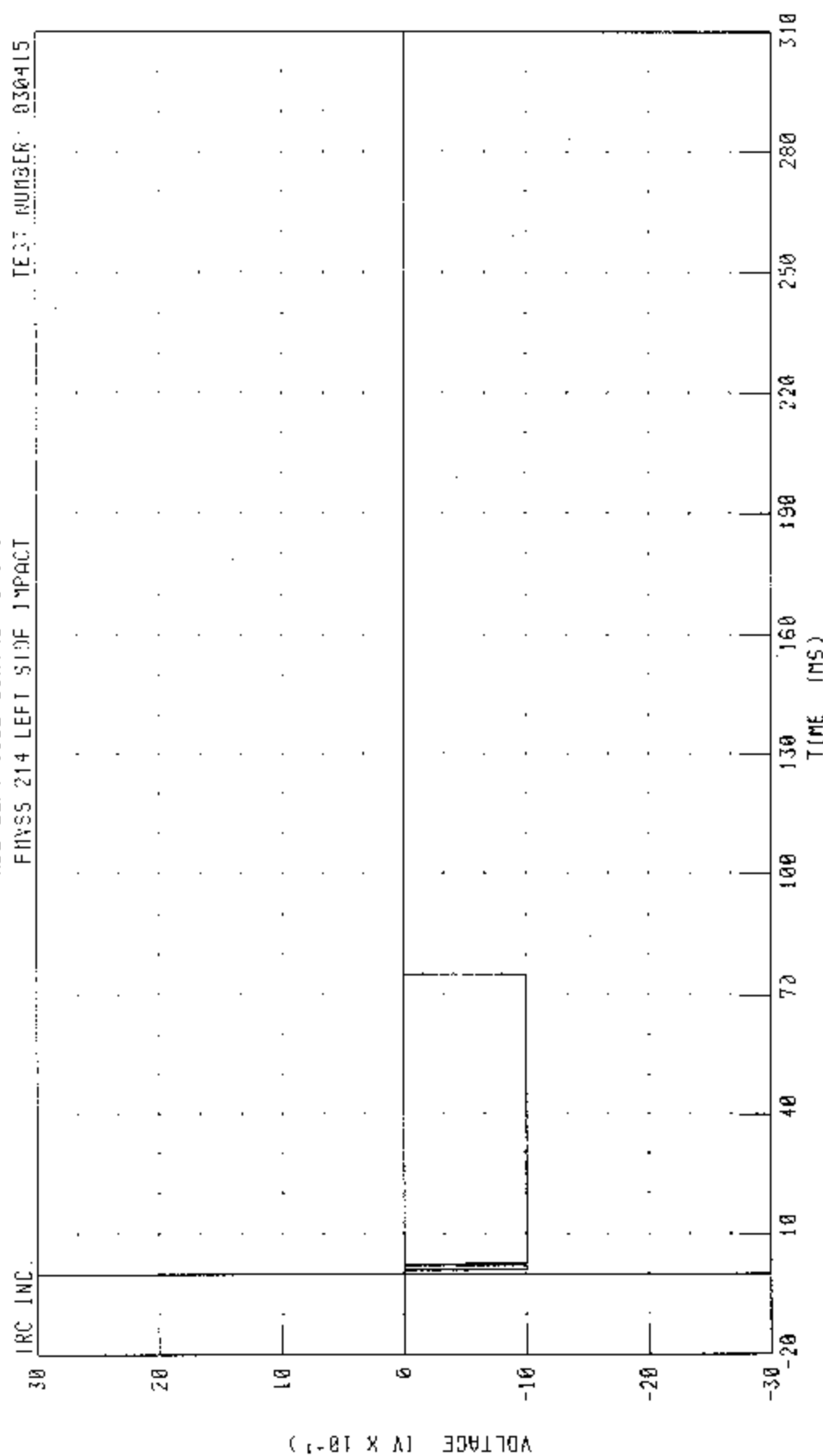
CHANNEL: MDR1 FILTER: CH CLASS 1000 PEAK DATA: 0 00 V @ 3:0 00 MS; -1 00 V @ 1 36 MS

55/28 KPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

MODE LEFT SIDE CONTACT SWITCH

PHYSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415



CHANNEL: HDBL1 FILTER: CH CLASS 1000

PEAK DATA 0.00 V @ 310.00 MS, -1.00 V @ 112 MS

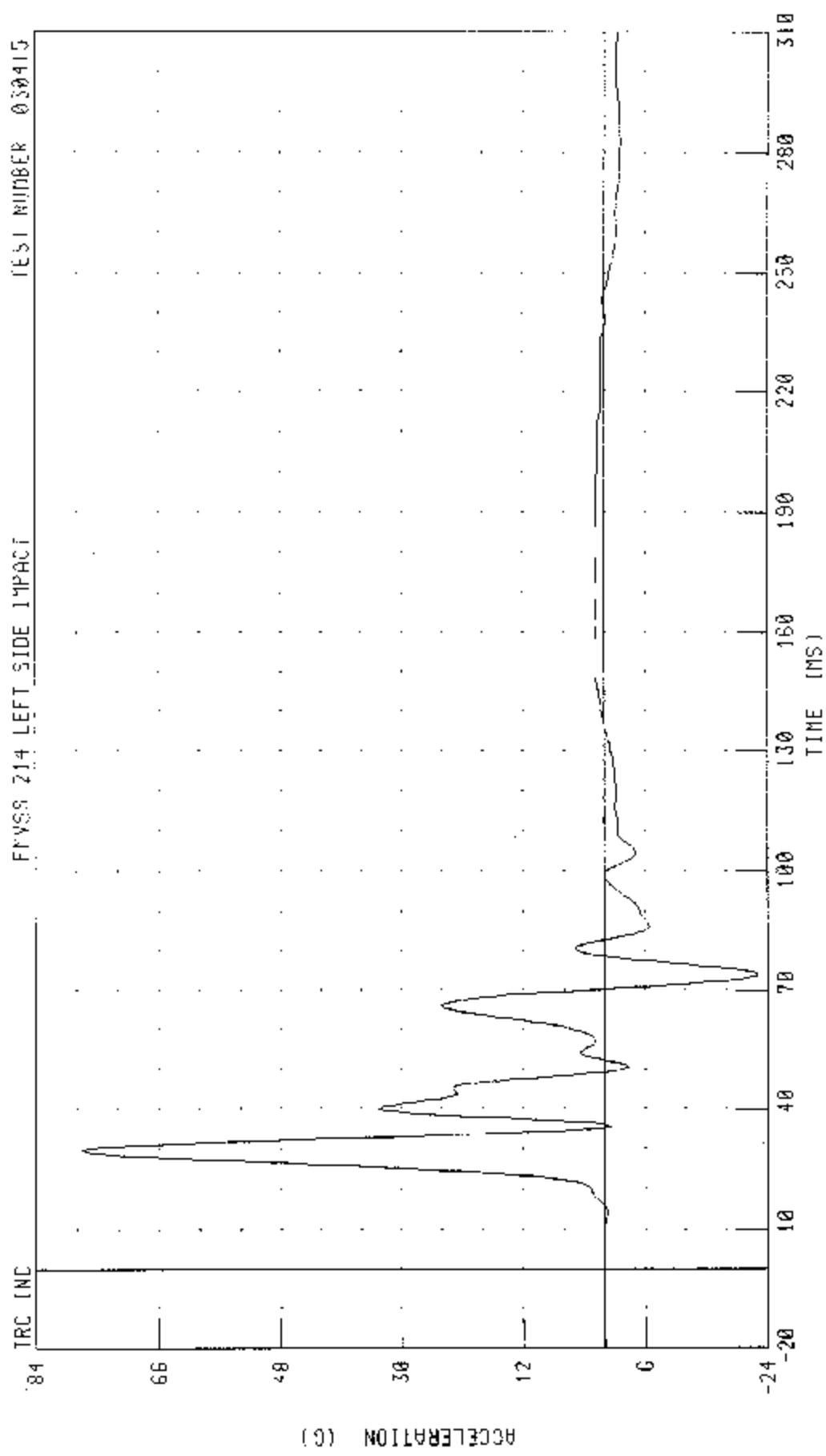
Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - FIR Filtered

55/20 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE CARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER UPPER RIB Y-AXIS ACCELERATION

FRVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



CHANNEL: LURYC1 FILTER: FIR 100

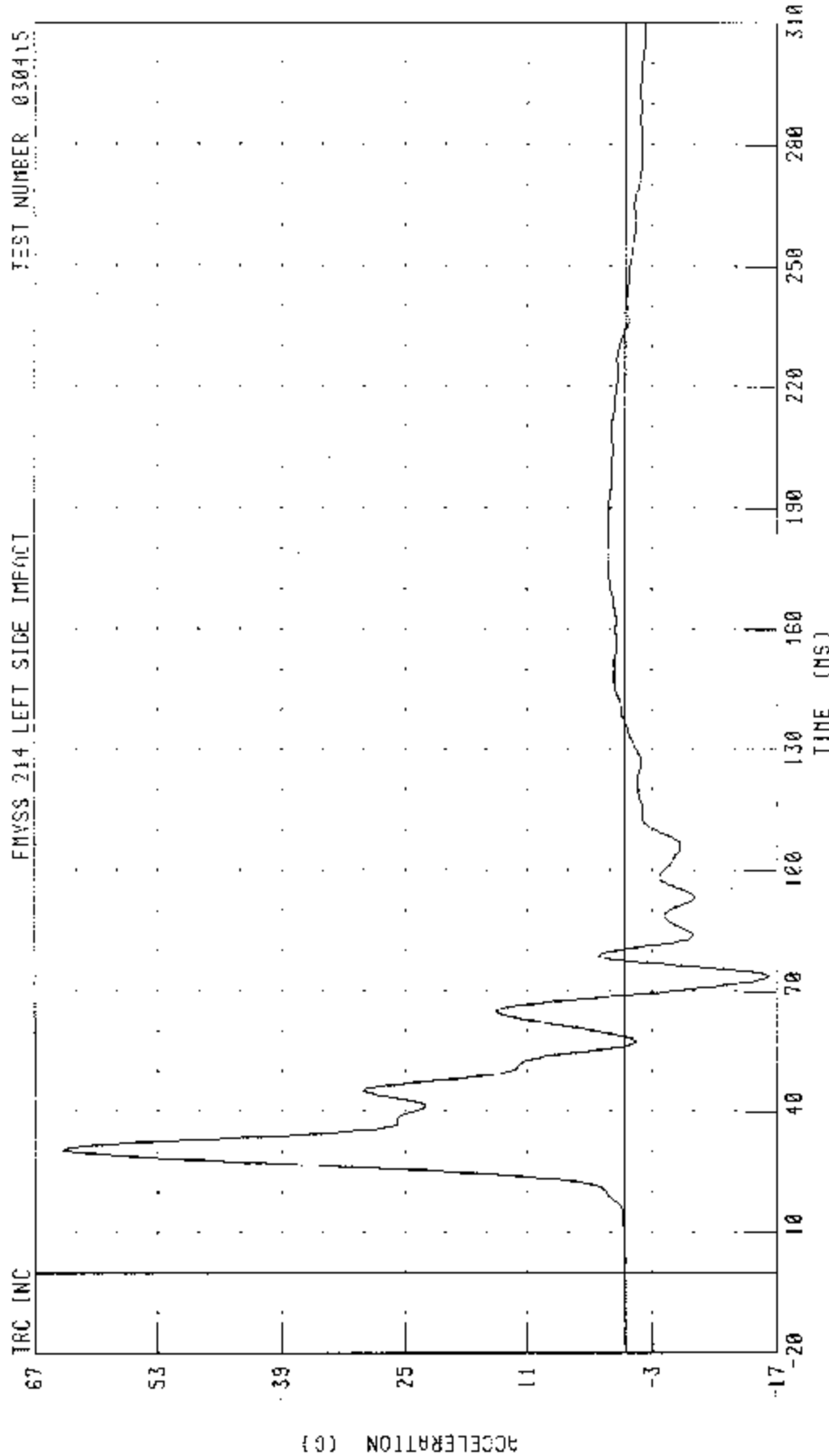
PEAK DATA 77.36 G @ 30.00 MS, -22.53 G @ 73.75 MS

55/28 KPH 50 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER LOWER RIB Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415

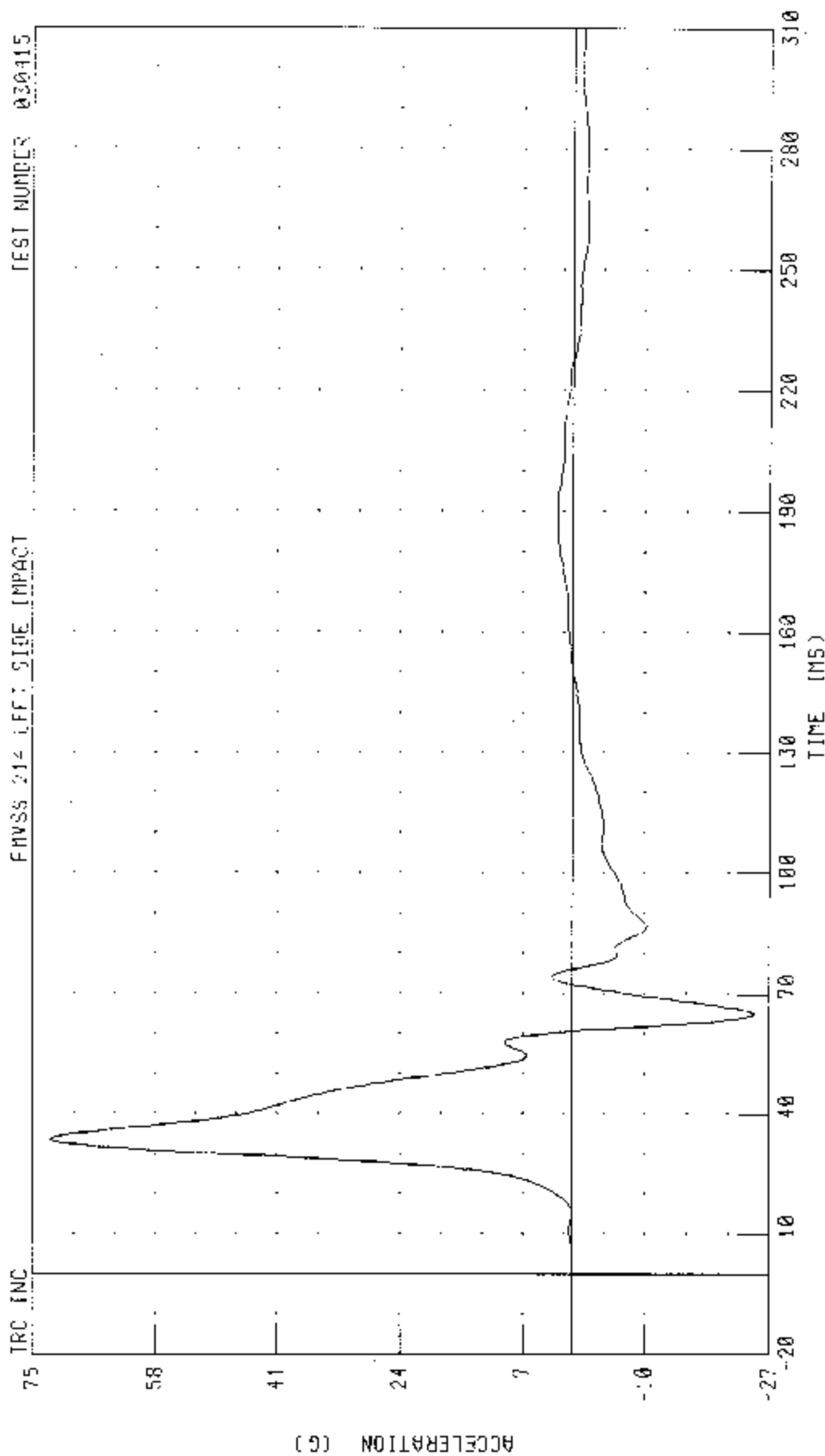


CHANNEL: LLRYG1 FILTER: FIR 100

PEAK DATA: 63.77 G @ 30.62 MS, -16.15 G @ 73.75 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER LOWER SPINE Y-AXIS ACCELERATION



CHANNEL: TL2YG1 FILTER: FIR 100

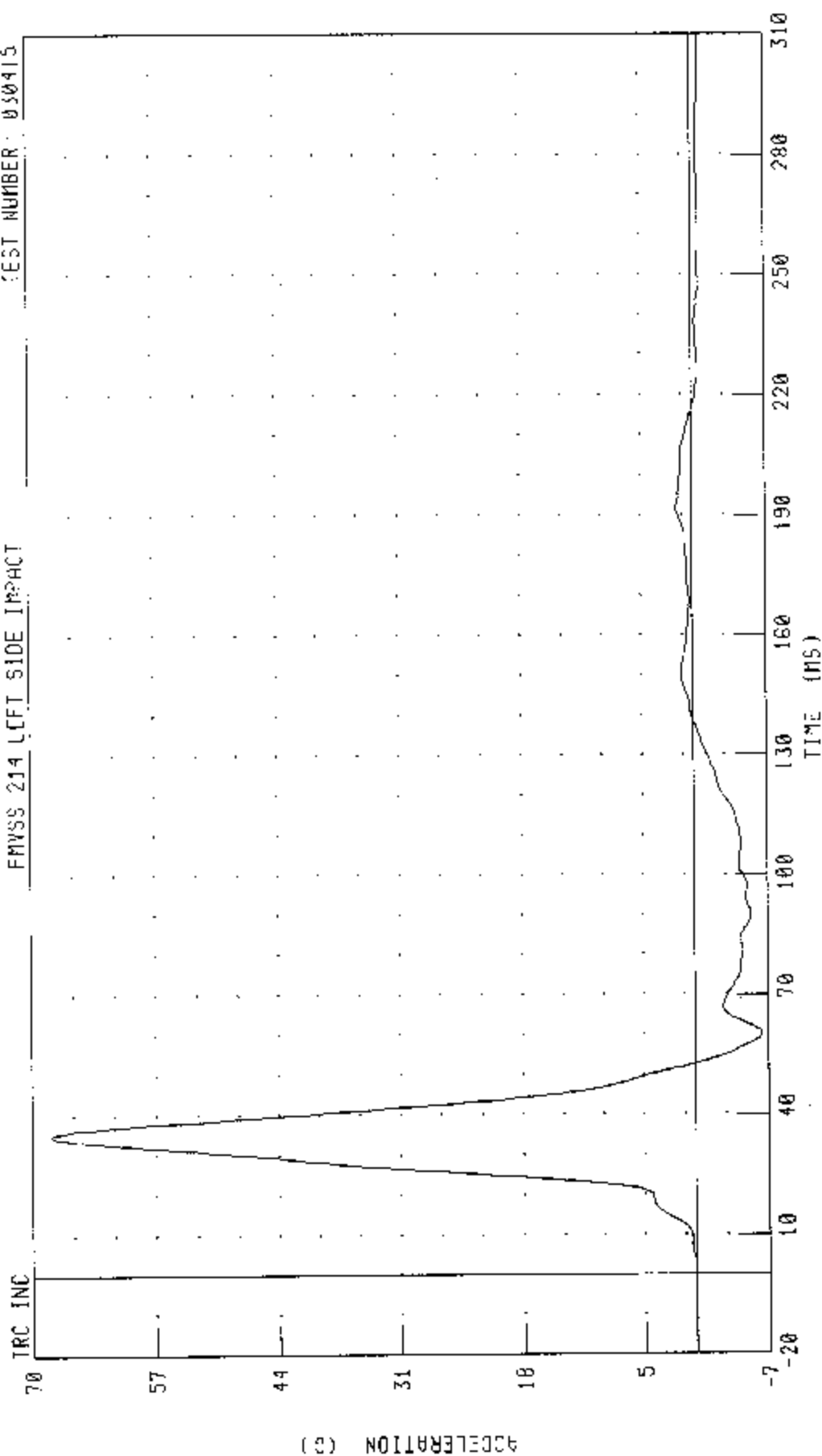
PEAK DATA 72 48 6 @ 33 75 MS; -25 01 0 8 65 00 MS

55/28 MPH 90 DEGREE STIFF IMPACT INVOLVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER PEVVIS Y-AXIS ACCELERATION

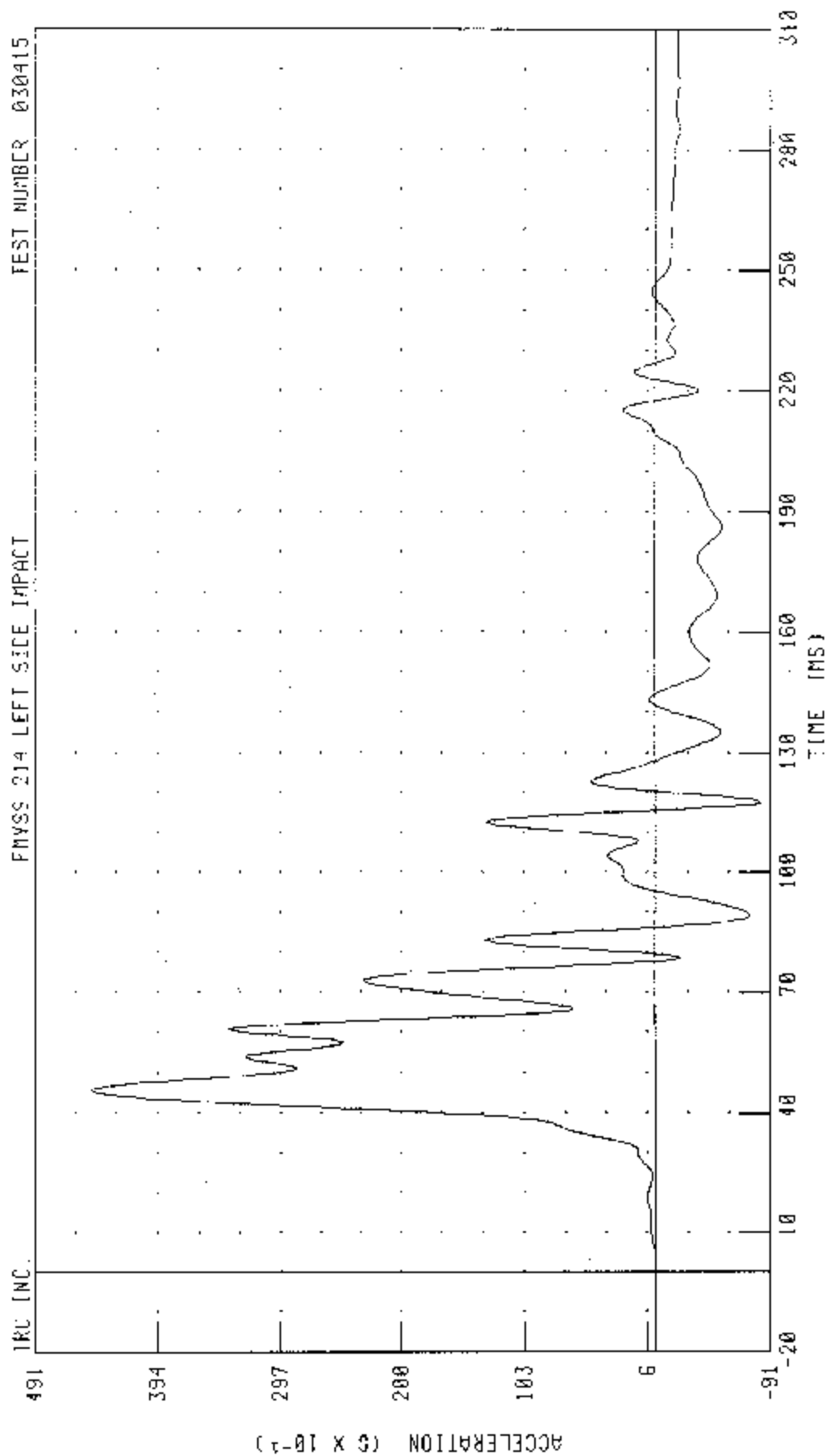
FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415



55/20 KPH 90 DEGREE SIDE IMPACT (MOVING U-FORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY.
 LEFT REAR PASSENGER UPPER RIB Y-AXIS ACCELERATION

IRU INC. FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415

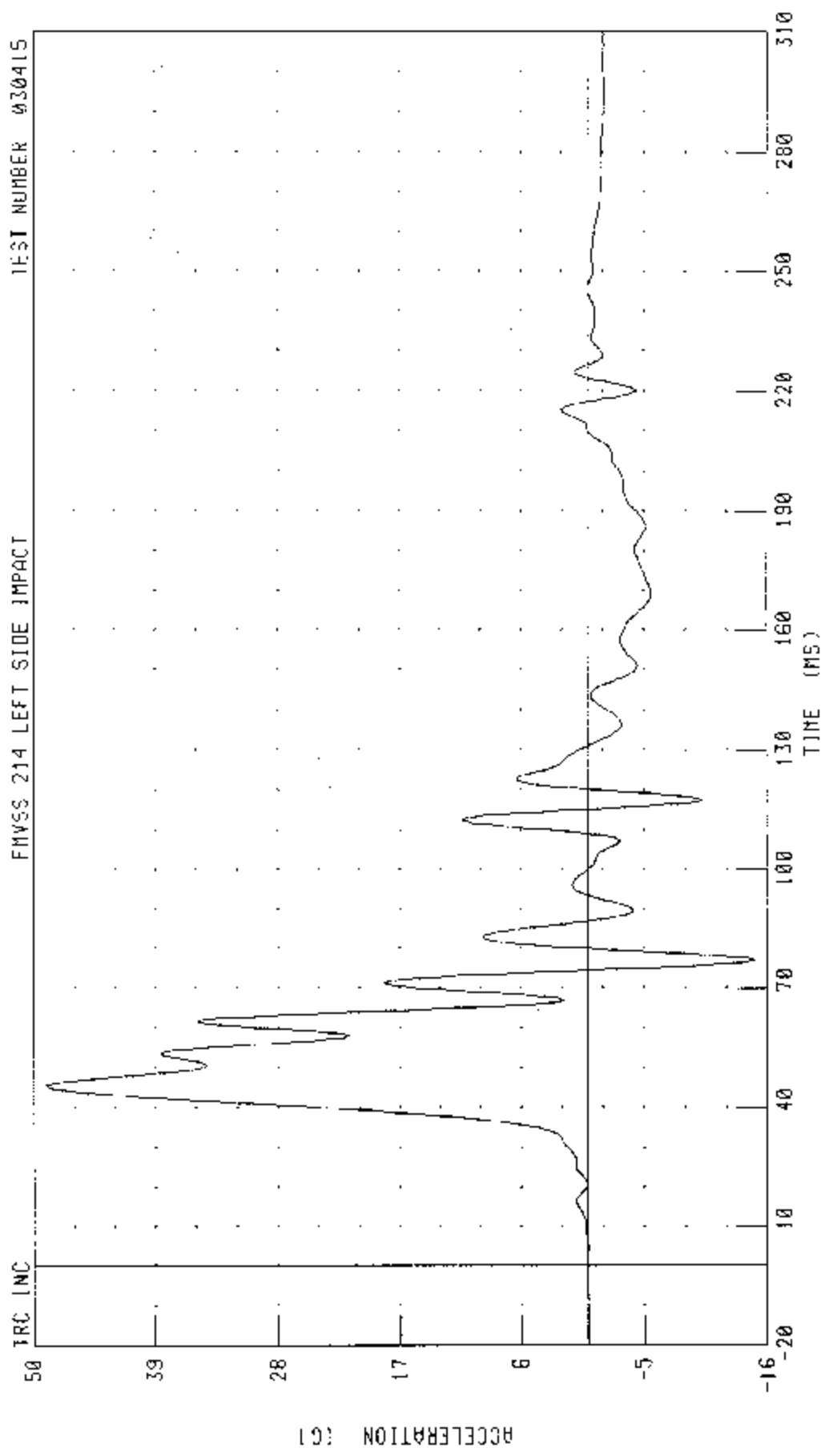


CHANNEL LURYG4 FILTER FIR 100

PEAK DATA: 44 62 G @ 45 62 MS; -8 28 G @ 117 50 MS

53/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER LOWER RIB Y-AXIS ACCELERATION



CHANNEL: LLRYG4 FILTER: -IR 100

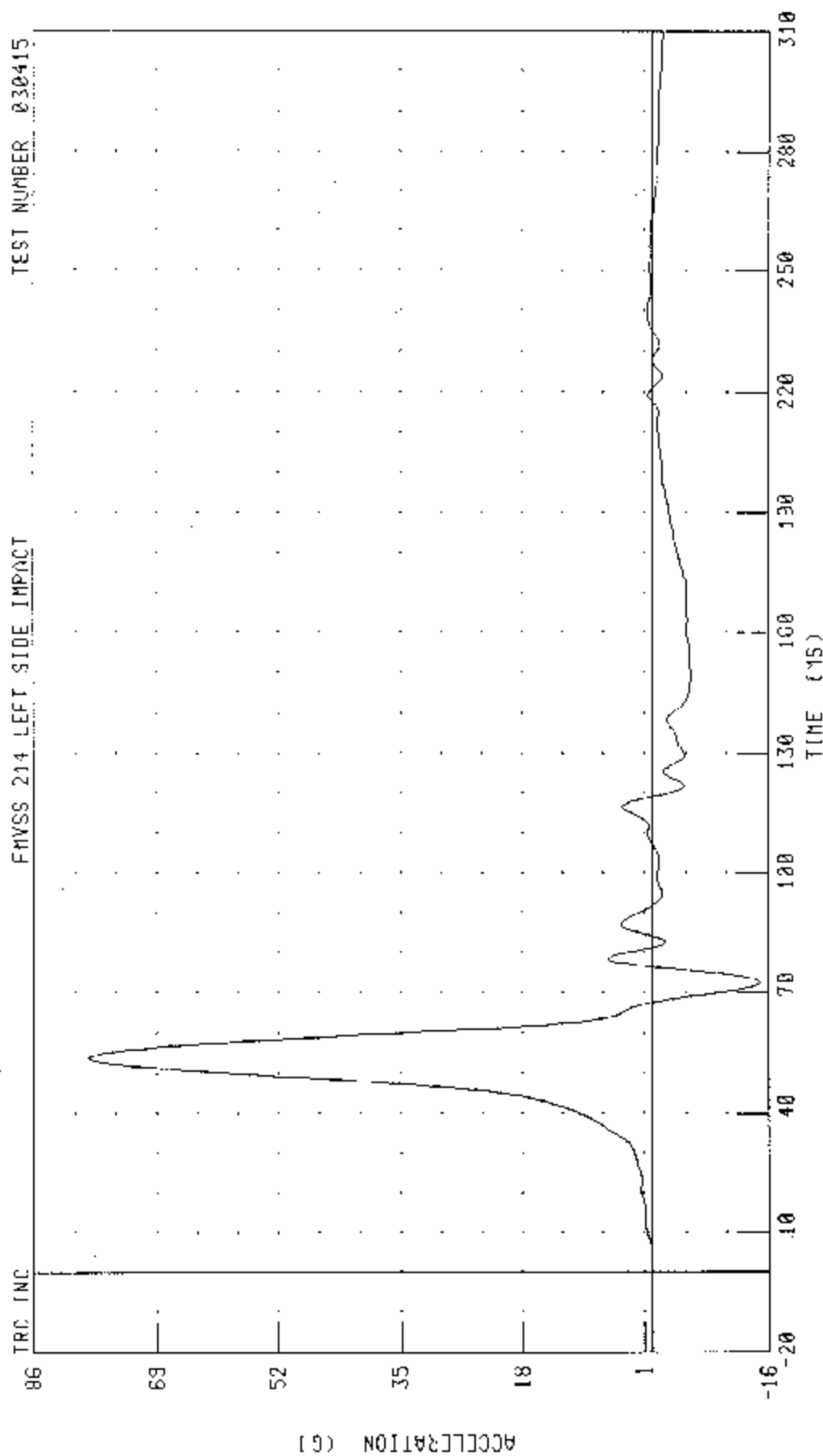
PEAK DATA: 48 87 G @ 45 62 MS; -14 87 G @ 76 88 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRI) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER LOWER SPINE Y-AXIS ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER 030415



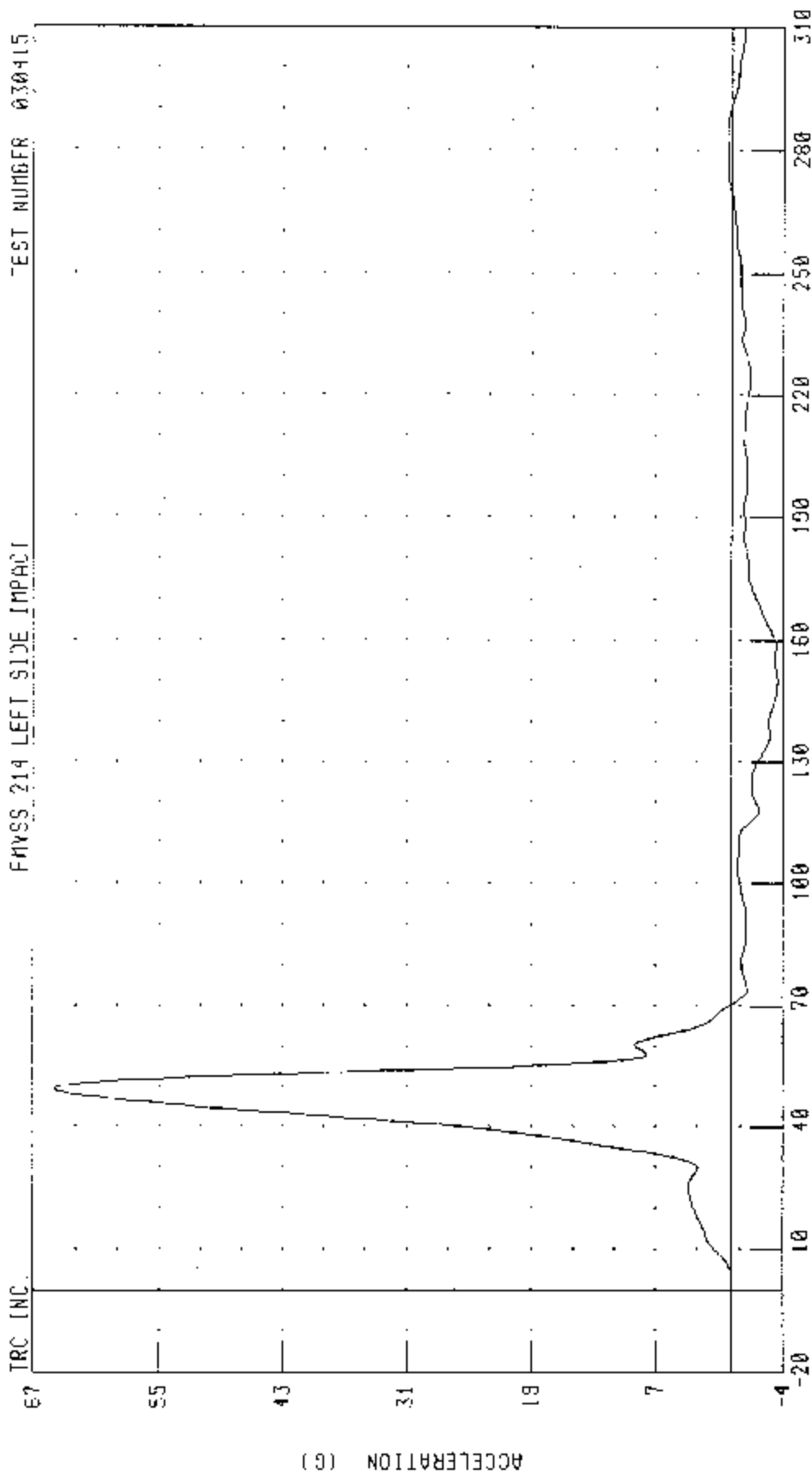
CHANNEL: T12Y04 FILTER FIR 100

PEAK DATA 78 49 G @ 53 75 MS, -14.83 G @ 72 50 MS

55/28 KPH 00 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INITIAL SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER PEVYIS (HXS) ACCELERATION

TRC INC. FVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415



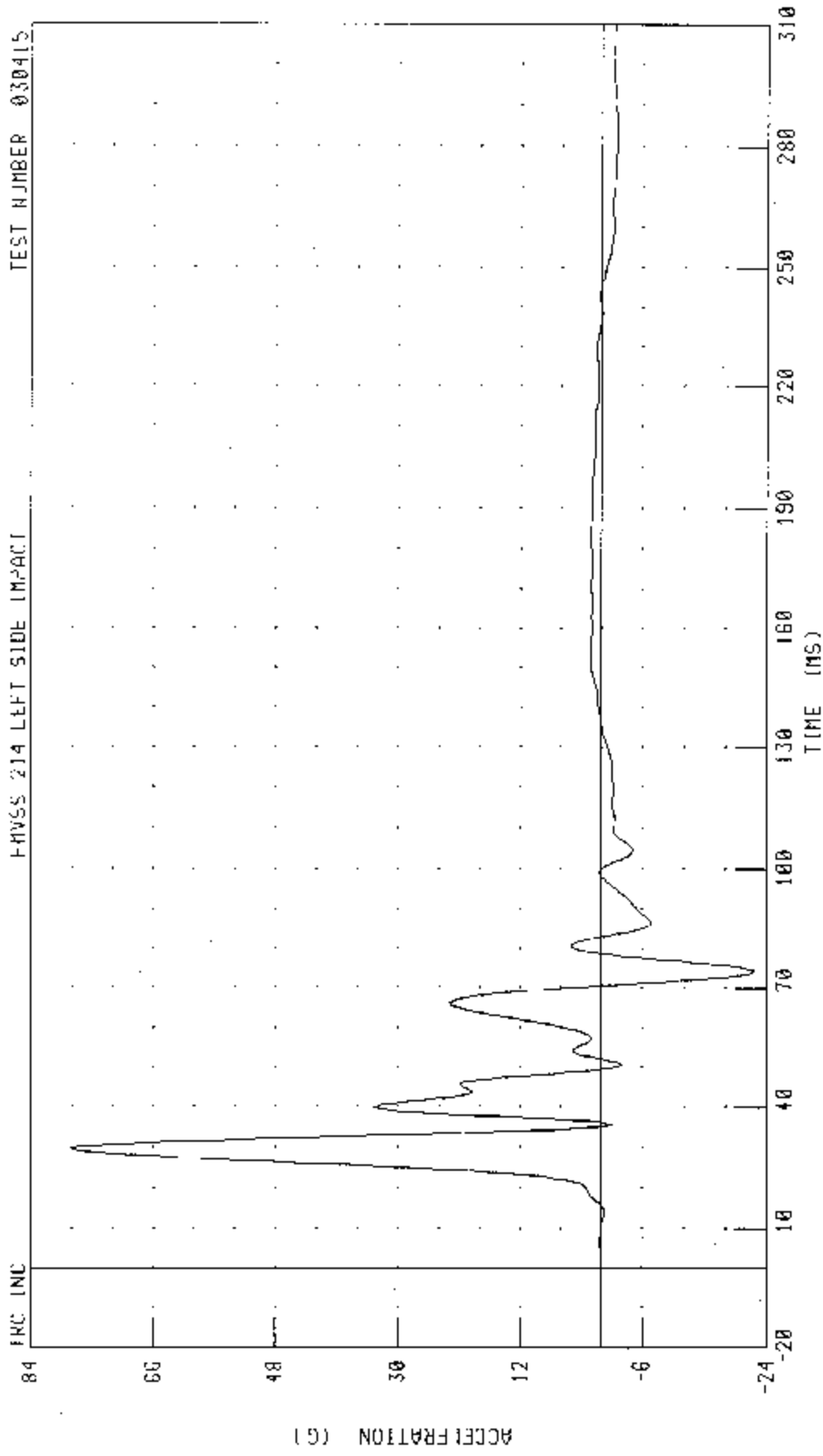
CHANNEL: PEVYC4 FILTER: FIR 100

PEAK DATA: 65 20 G @ 49.37 MS, -4 37 G @ 150 62 MS

Driver and Passenger Dummy Instrumentation Plots

Acceleration Data - FIR Filtered - Redundant

55/28 KPH 90 DEGREE SIDE IMPACT MOVING DEFORMABLE BARRIER INTO LEFT SIDE OF 2003 SUBARU LEGACY
 DRIVES UPPER RIB Y-AXIS REDUNDANT ACCELERATION

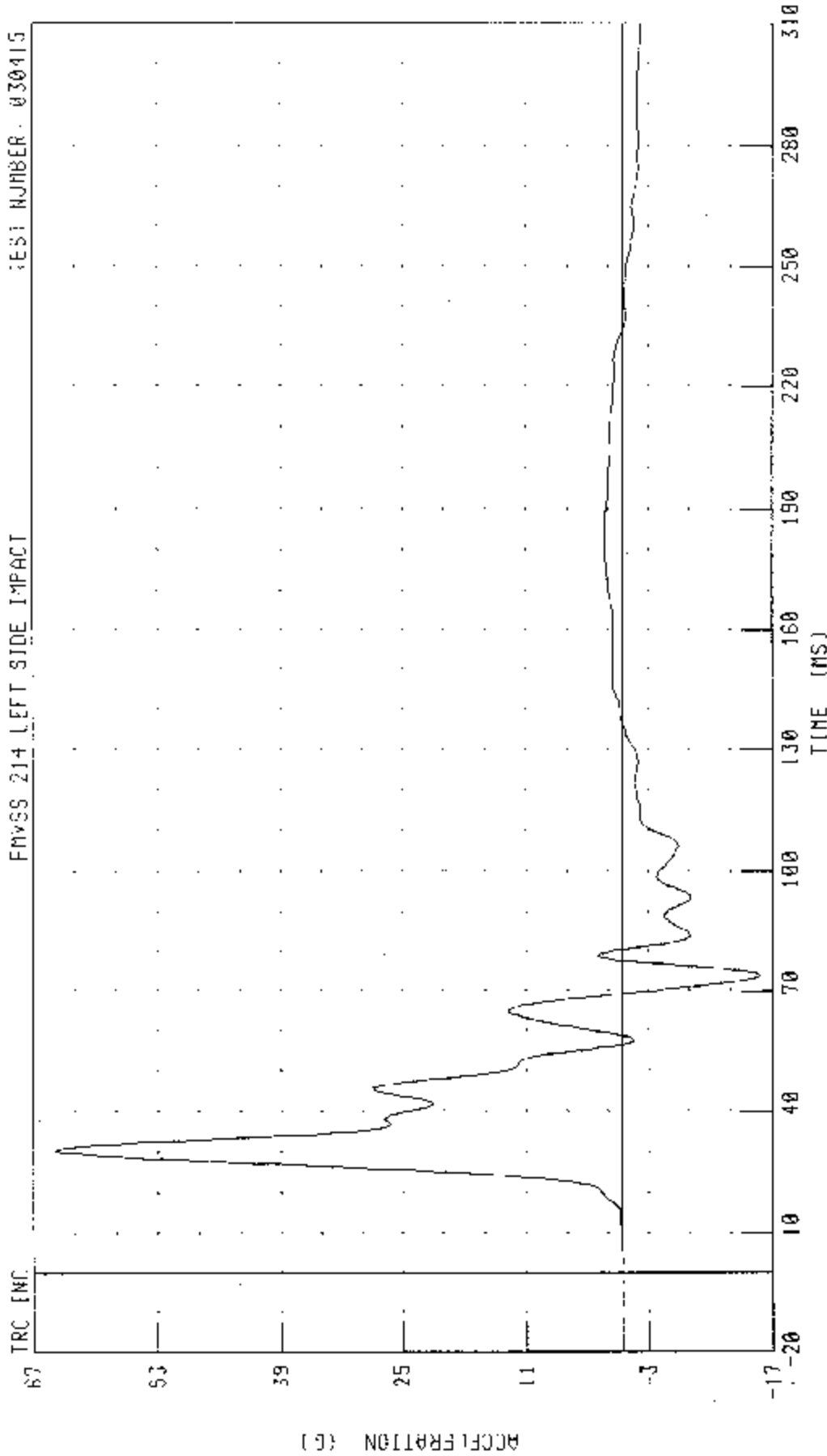


CHANNEL: LURYR1 FILTER: FIR 100

PEAK DATA: 78 07 6 30 00 MS; -22 13 6 74.37 MS

55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFURABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 DRIVER LOWER RIB Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER: 030415



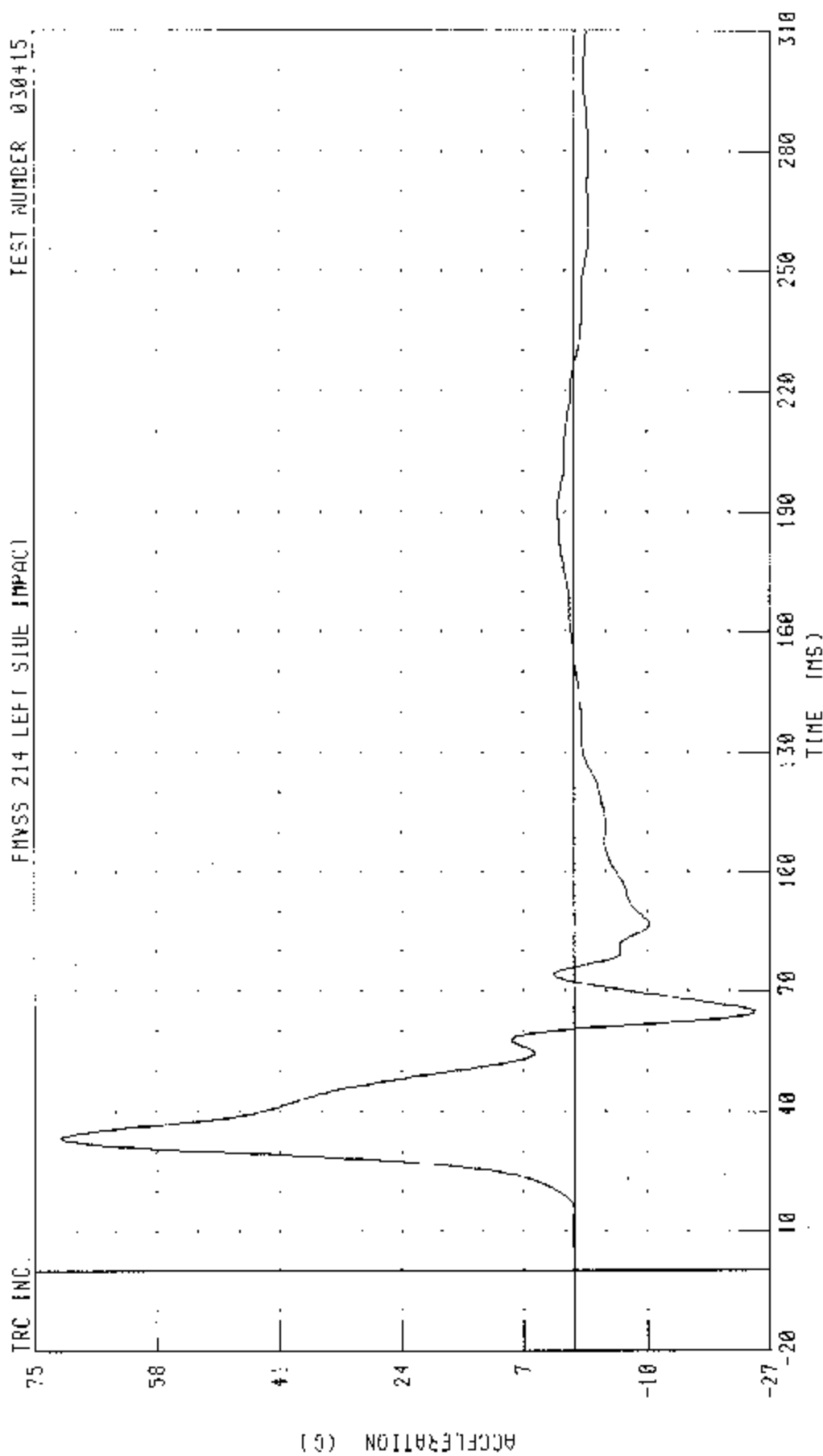
CHANNEL: LLRYR1 FILTER: FIR 100

PEAK DATA 64.61 G @ 30.62 MS, -15.67 G @ 73.75 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER: INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER LOWER SPINE Y AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415

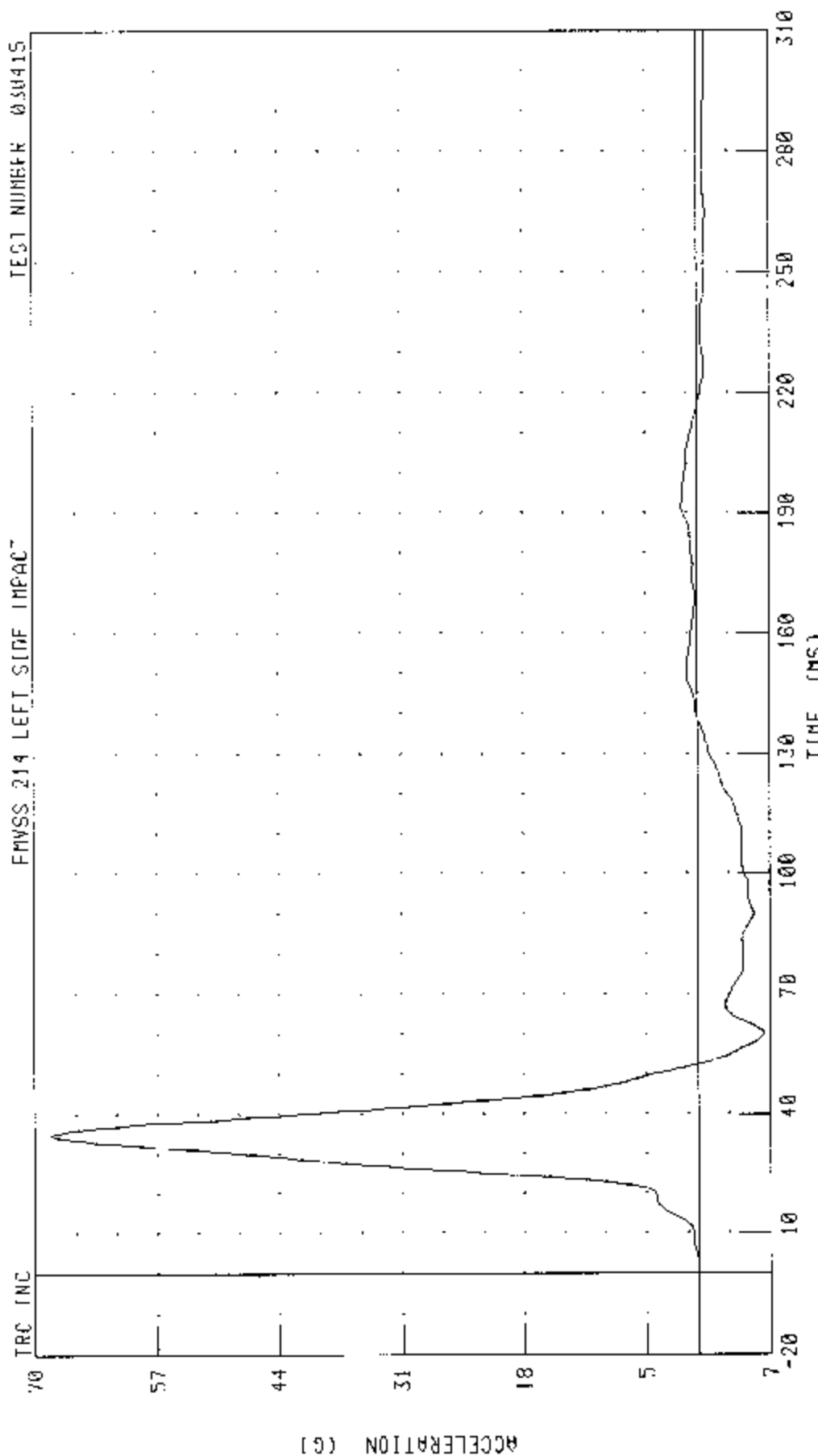


CHANNEL: T12YR1 FILTER: FIR 100

PEAK DATA: 71.49 G @ 33.75 MS, -24.93 G @ 65.00 MS

55/28 KPH 30 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

DRIVER PEVYR1 Y-AXIS REDUNDANT ACCELERATION



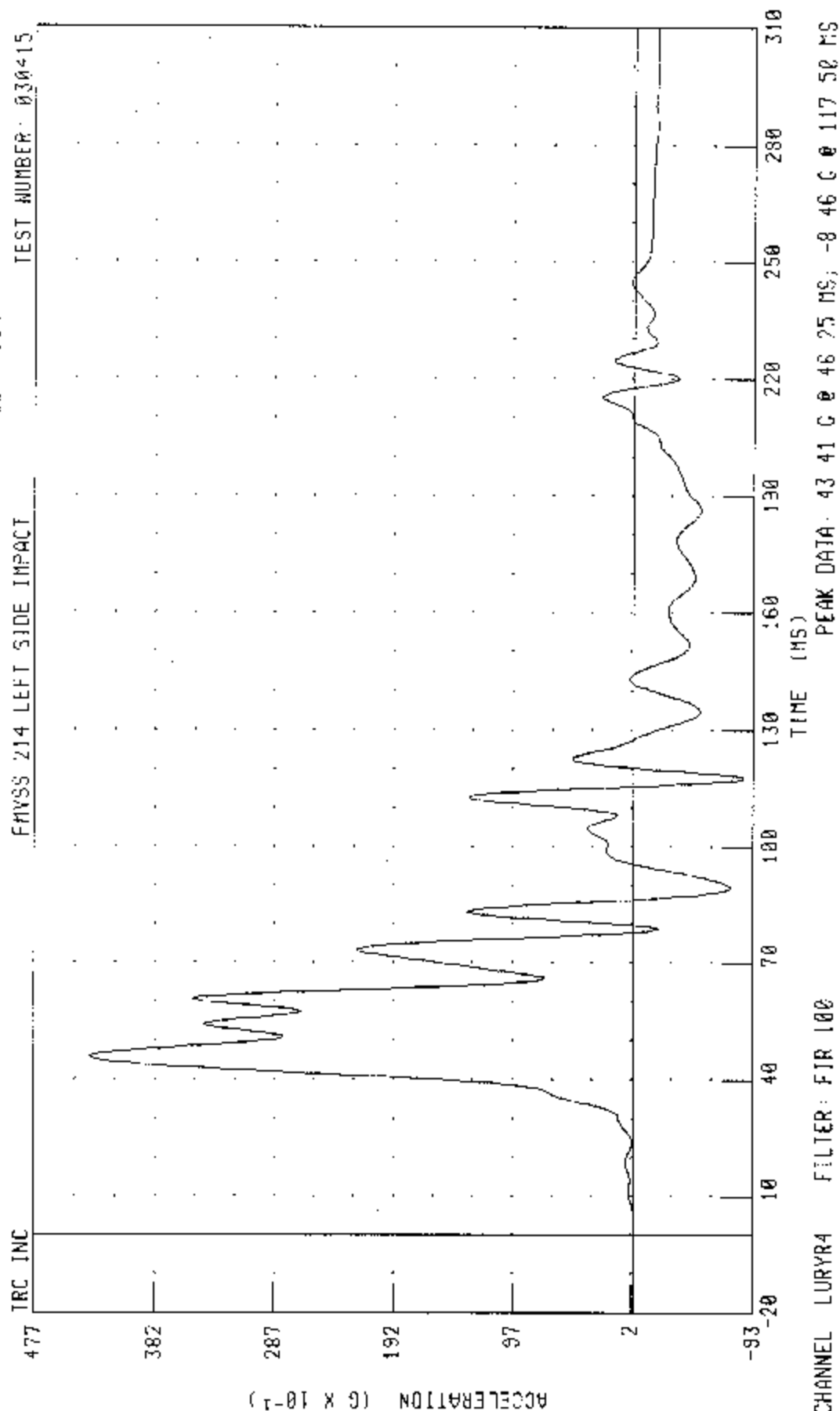
CHANNEL: PEVYR1

FILTER: FIR 100

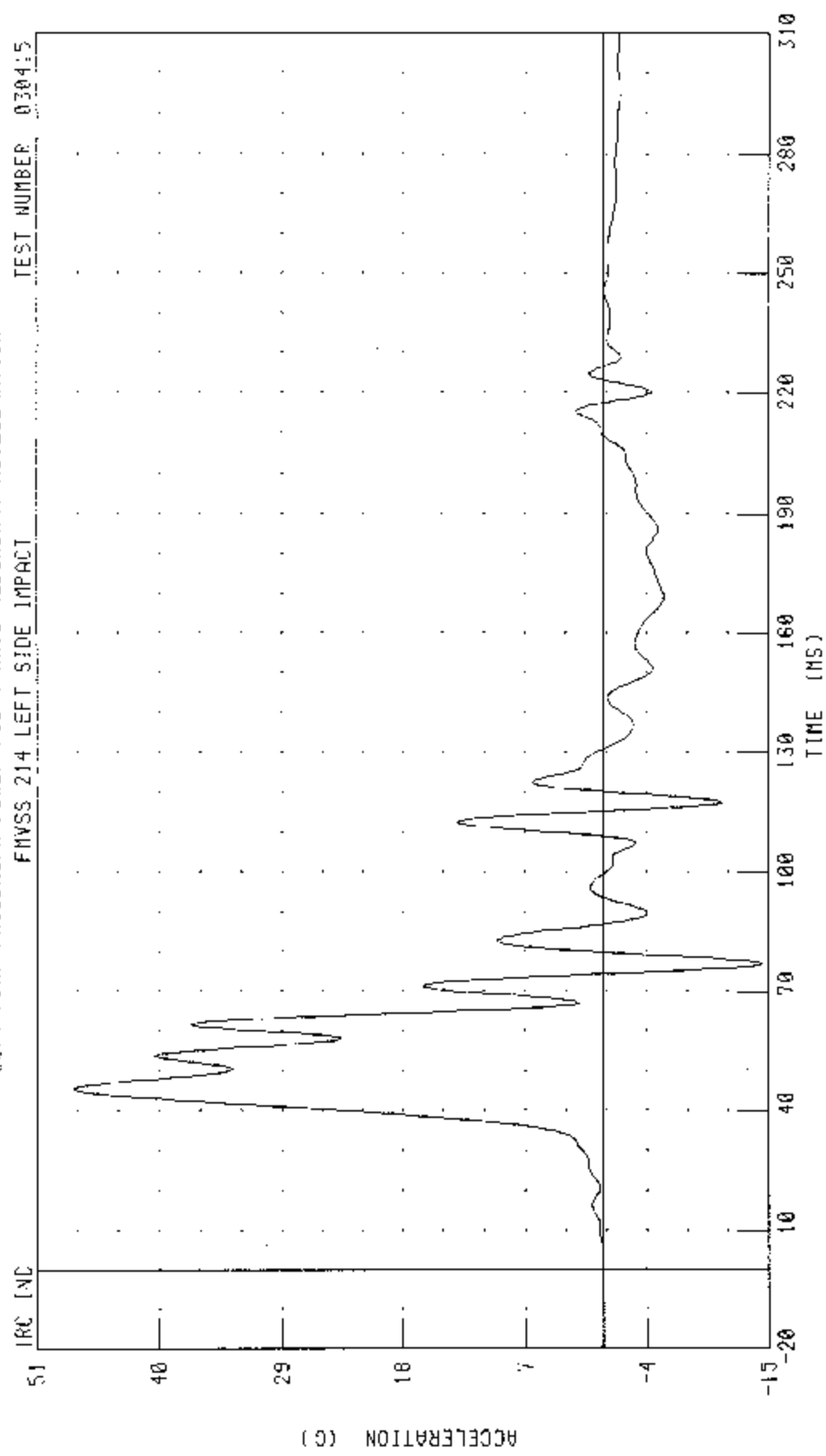
PEAK DATA: 68.53 G @ 35.00 MS, -6.93 G @ 60.00 MS

55/28 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER UPPER RIB Y AXIS REDUNDANT ACCELERATION



55/78 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) INTO LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER LOWER RIB Y-AXIS REDUNDANT ACCELERATION



TEST NUMBER 030415

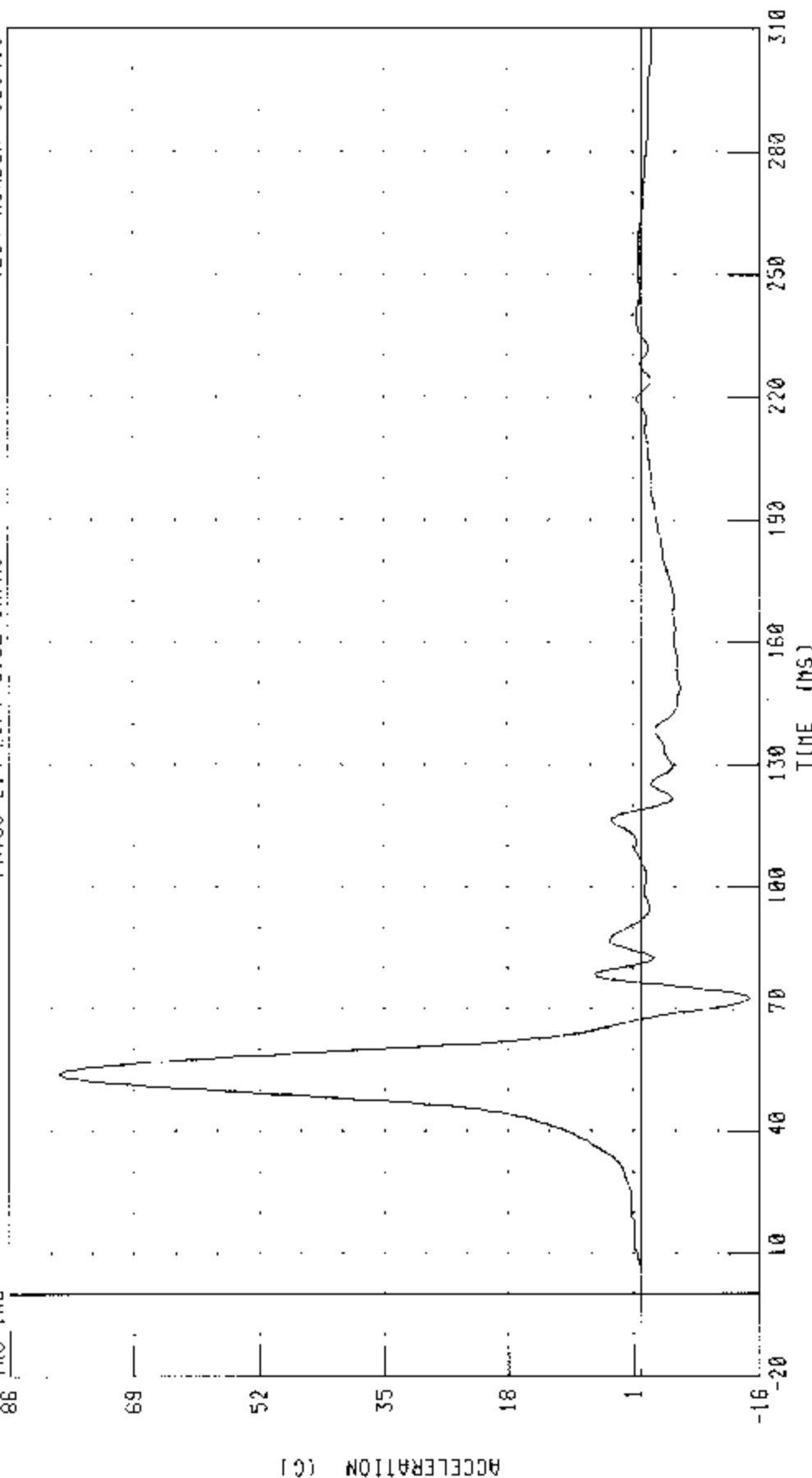
FMVSS 214 LEFT SIDE IMPACT

CHANNEL LLRYR4 FILTER FIR 100 PEAK DATA: 47 69 6 0 45 62 MS; -14 41 0 0 76 88 MS

55/20 KPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) IN(D) LEFT SIDE OF 2003 SUBARU LEGACY
 LEFT REAR PASSENGER LOWER SPINE X-Z AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT TEST NUMBER 030415

TRC INC



CHANNEL: TL2YR4 FILTER FIR 100

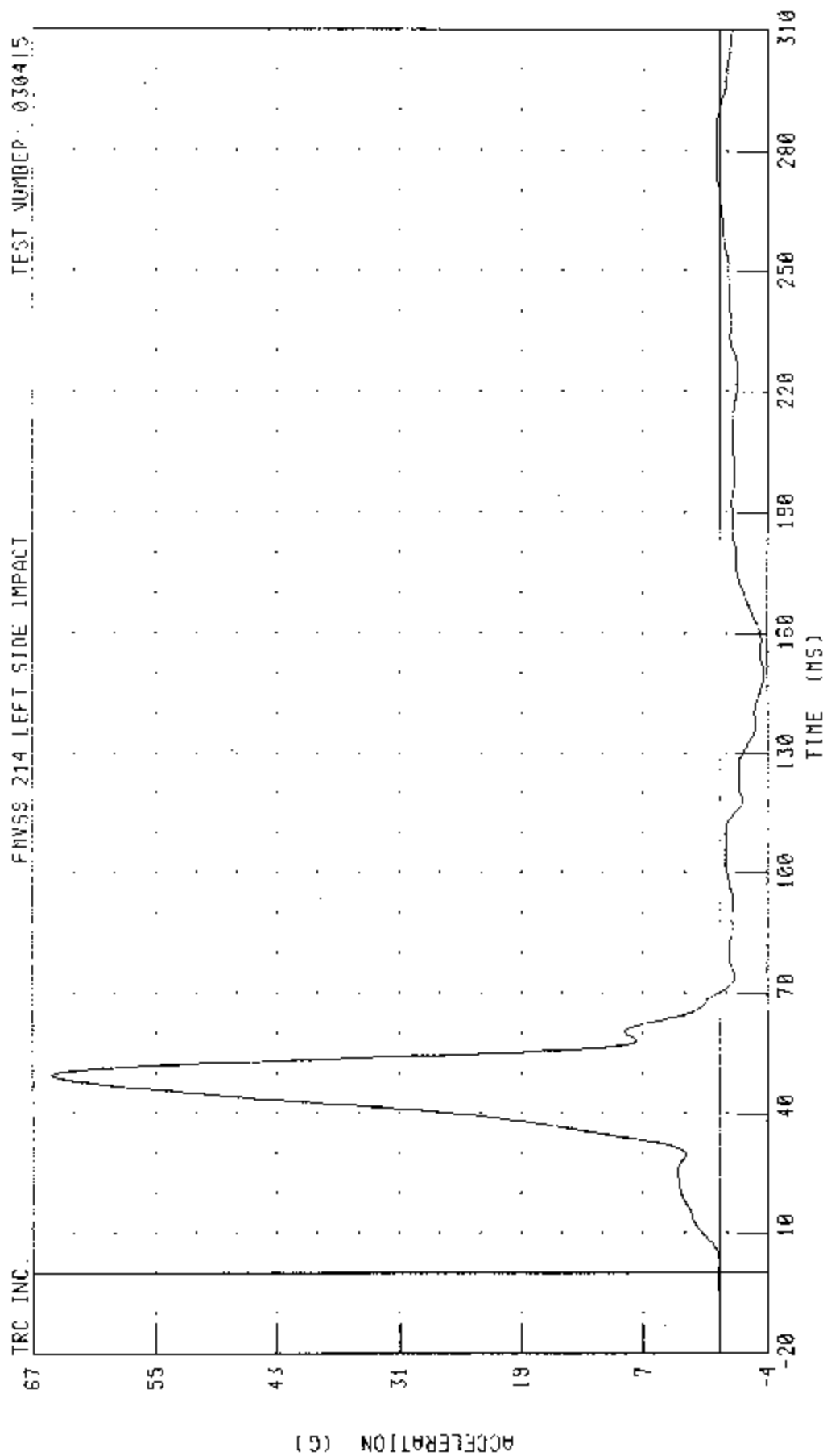
PEAK DATA 79 31 G @ 53 75 MS; -14 65 G @ 72 50 MS

55/28 MPH 90 DEGREE SIDE IMPACT (MOVING DEFORMABLE BARRIER) (NTO LEFT SIDE OF 2003 SUBARU LEGACY

LEFT REAR PASSENGER PELVIS Y-AXIS REDUNDANT ACCELERATION

FMVSS 214 LEFT SIDE IMPACT

TEST NUMBER: 030415



CHANNEL: PEVYR4 FILTER: FIR 100

PEAK DATA: 65.46 G @ 49.37 MS, 4.33 G @ 150.00 MS

Appendix C

SID Configuration and Performance Verification Data

Summary
SID Pre-Test and Post-Test Calibration
Configured For Left Side Impact

Date: April 3-17, 2003 TRC Inc. Test Number: 065C07/C08 & 028C04/C05

Laboratory Technician: Chris Roberts, Jack Willeke

Test Parameter	Specification	SID-HIII 065		SID-HIII 028	
		Pre-Test	Post-Test	Pre-Test	Post-Test
SH - Seated Height (mm)	889-909	895	894	896	895
RH - Rib Height (mm)	502-520	509	511	504	503
HP - Hip Pivot Height (mm)	99 ref	99.1	99.1	99.1	99.1
RD - Rib from Back Line (mm)	229-241	237	238	233	231
KH - Knee Pivot from Back Line (mm)	511-526	513	514	514	514
KV - Knee Pivot to Floor (mm)	490-505	498	499	498	499
HW - Hip Width (mm)	356-391	372	370	373	372
Thorax Impacts					
Temperature (°C)	18.9-25.5	21.7	22.2	21.7	22.2
Relative Humidity (%)	10-70	41	41	40	40
Probe Speed (m/s)	4.27-4.33	4.31	4.30	4.30	4.30
Upper Rib (g's)	37-46	41.9	43.2	39.6	39.1
Lower Rib (g's)	37-46	42.4	39.7	39.1	40.4
Lower Spine (g's)	15-22	21.2	19.6	16.4	18.2
Pelvis Impacts					
Temperature (°C)	18.9-25.5	21.7	22.2	21.7	22.2
Relative Humidity (%)	10-70	40	41	38	41
Probe Speed (m/s)	4.27-4.33	4.28	4.25	4.26	4.30
Pelvis (g's)	40-60	53.8	53.5	47.0	48.4

Calibration Test Results

Pre-Test

SID: 065

Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements (tested on February 3, 2002, for a previous calibration series).

Transportation Research Center Inc.
572F SID Dummy
External Dimensions
Serial No. 065 Calibration No. 07

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	895 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	509 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Rib From Backline	RD	228.6 - 241.3 mm	237 mm	Yes
Knee Pivot From Backline	KH	510.5 - 525.8 mm	513 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	498 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	372 mm	Yes
Top Rib Width From CL	RW-1	165.1 - 180.3 mm	168 mm	Yes
Bottom Rib Width From CL	RW-2	165.1 - 180.3 mm	169 mm	Yes
Difference Between Top & Bottom Rib Width from CL		$\leq$ 2.5 mm	1.0 mm	Yes

Technician



Approved



TRE

TRANSPORTATION RESEARCH CENTER INC.

LATERAL HEAD DROP TEST

SID/HIII DUMMY

03-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

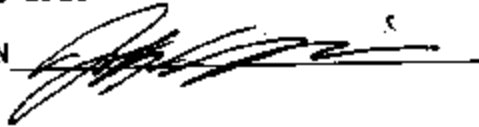
TEST NO. HDL06507

572M SID/HIII SNO65 HEAD CAL07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 deg. C	21.67 deg. C
RELATIVE HUMIDITY	10 - 70 %	49.00 %
PEAK RESULTANT ACCELERATION	120 - 150 G	143.38 G
PEAK LONGITUDINAL ACCELERATION	15 G MAX	-8.39 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

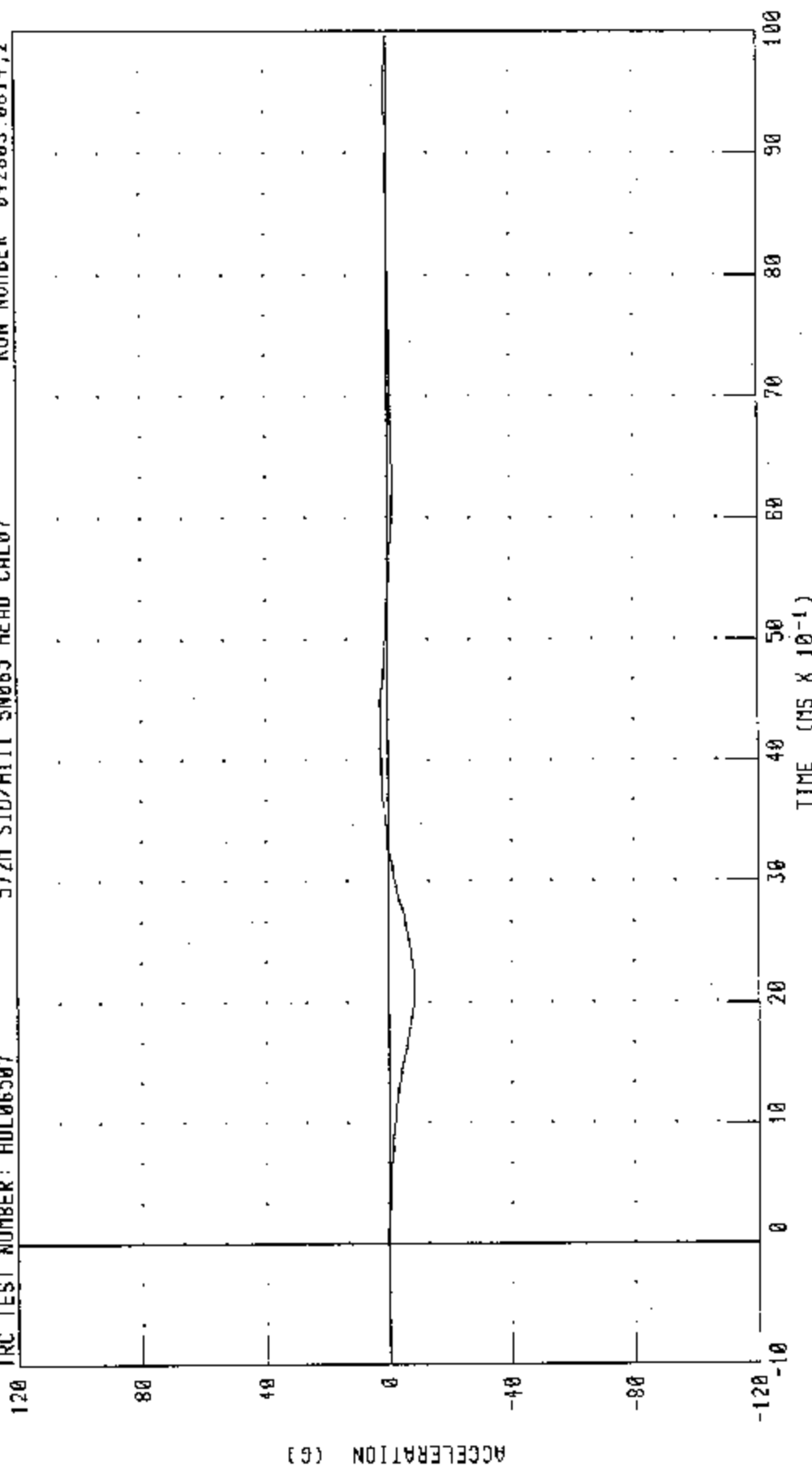


RUN NUMBER: 042803.0627;1

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: HDL06507 572M SID/HIII SN065 HEAD CAL07 RUN NUMBER: 042803 061472



PEAK DATA: 2.70 G @ 4.16 MS; -8.39 G @ 2.08 MS

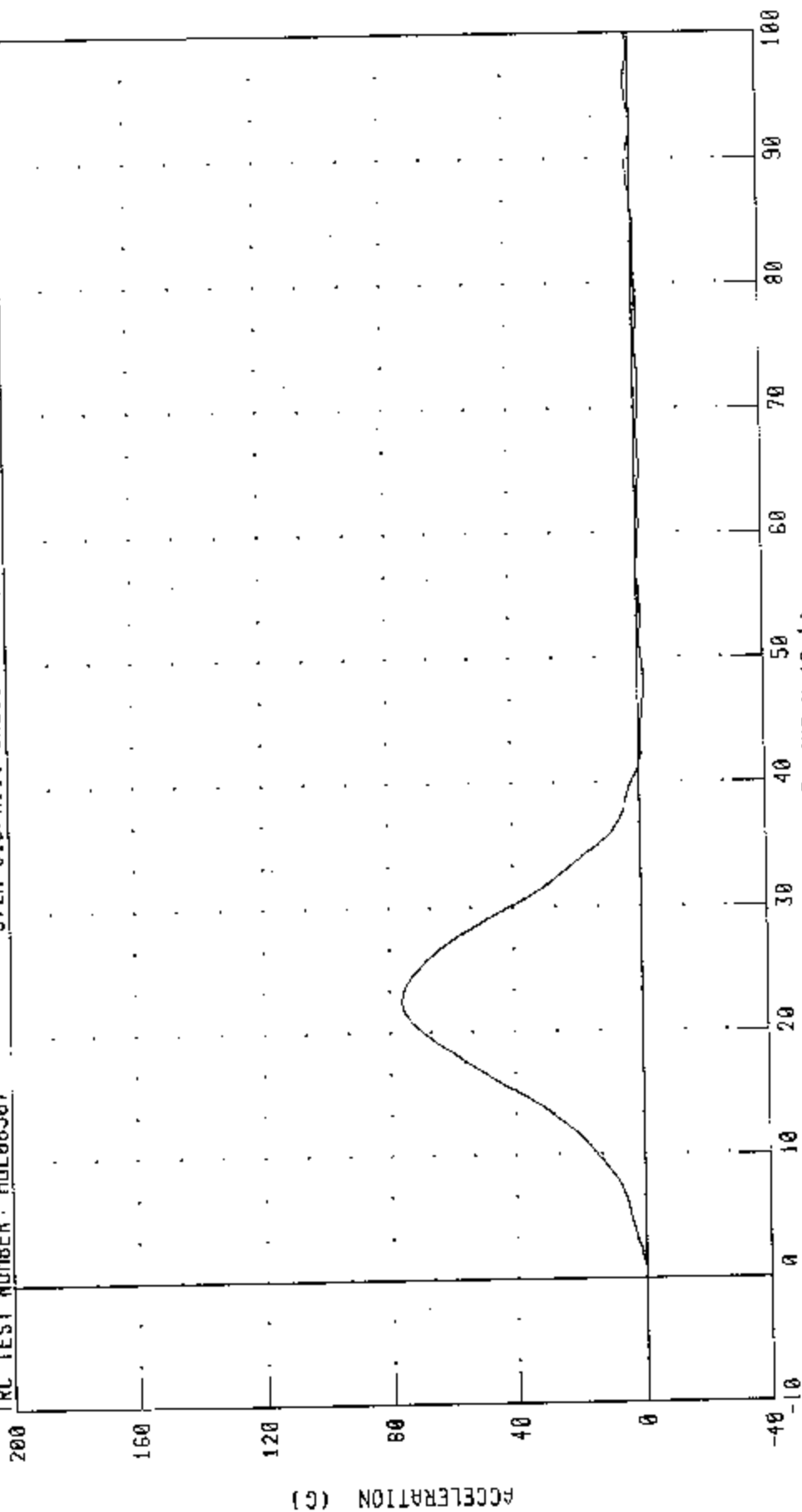
CHANNEL: HEDXC FILIER: CH. CLASS 1000

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP
 HEAD ACCELERATION Y AXIS

RUN NUMBER: 042803 0614;2

TRC TEST NUMBER: HDL06507

572M SID/HIII SN065 HEAD CAL07



TIME (MS X 10⁻¹)

PEAK DATA: 76.19 G @ 2.24 MS; -1 93 G @ 4.80 MS

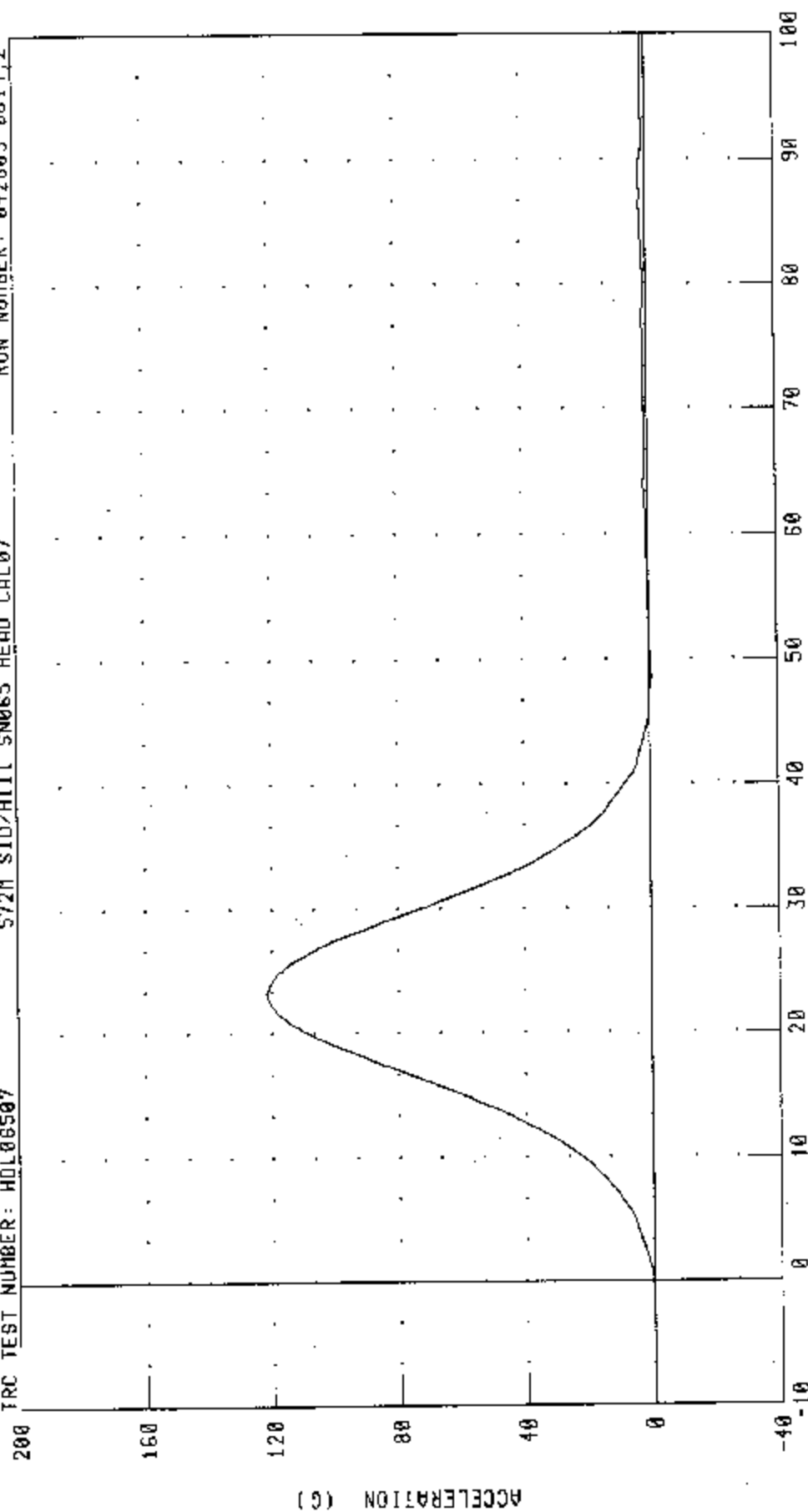
CHANNEL: HEDYC FILTER: CH. CLASS 1000

572M SID/HILL DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP
HEAD ACCELERATION Z AXIS

RUN NUMBER: 042803 0614.2

572M SID/HILL SN065 HEAD CAL07

TRC TEST NUMBER: HDL06507



TIME (MS X 10⁻¹)

PEAK DATA: 121.35 G @ 2.32 MS; -0.66 G @ 4.88 MS

CHANNEL: HEADZG FILTER: CH. CLASS 1000

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD RESULTANT ACCELERATION

RUN NUMBER: 042803.0614.2

572M SID/HIII SN065 HEAD CAL07

IRC TEST NUMBER: HDL06507

200

160

120

80

40

0

-40

ACCELERATION (G)

TIME (MS X 10⁻¹)

100

90

80

70

60

50

40

30

20

10

0

-10

CHANNEL: HEDRC

FILTER: CH CLASS 1000

PEAK DATA: 143.38 G R 7.32 MS; 0 03 G 0 -0.32 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL NECK TEST

HYBRIDIII SID DUMMY

03-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO. NFL06507

H3/SID SN065 NECK LEFT CAL07

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 deg. C	21.67 deg. C
RELATIVE HUMIDITY		10 - 70 %	50.00 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
INTEGRATED VELOCITY	10 MS	1.96 - 2.55 M/S	2.48 M/S
	20 MS	4.12 - 5.10 M/S	4.86 M/S
	30 MS	5.73 - 7.01 M/S	6.81 M/S
	40 - 70 MS	6.27 - 7.64 M/S	7.10- 7.20 M/S
MAXIMUM MIDSAGGITAL PLANE ROTATION		66 - 82 deg.	72.35 deg.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		58 - 67 MS	60.80 MS
MAXIMUM MOMENT ABOUT OCCIPITAL CONDYLE		73 - 88 NM	81.76 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		49 - 64 MS	52.56 MS
TIME OF MAXIMUM ROTATION AFTER MAXIMUM MOMENT		2 - 16 MS	8.80 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 040303.1437;1

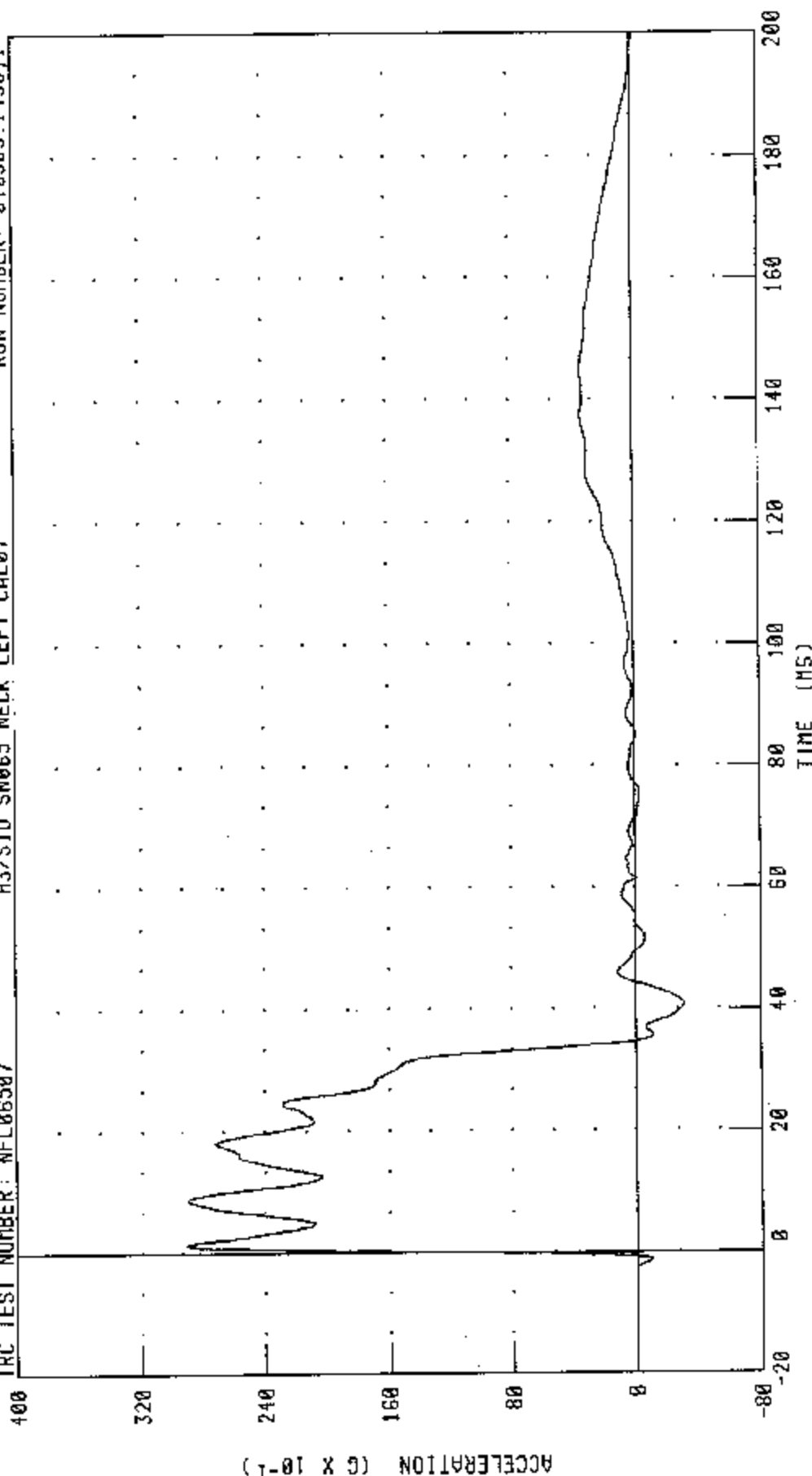
H3/S10 DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

PENDULUM DECELERATION

RUN NUMBER: 040303.1438.11

H3/S10 SN065 NECK LEFT CAL07

TRC TEST NUMBER: NFL06507



PEAK DATA: 29.02 G @ 1.36 MS, -3.08 G @ 40.80 MS

CHANNEL: PENXG FILTER: CH. CLASS 180

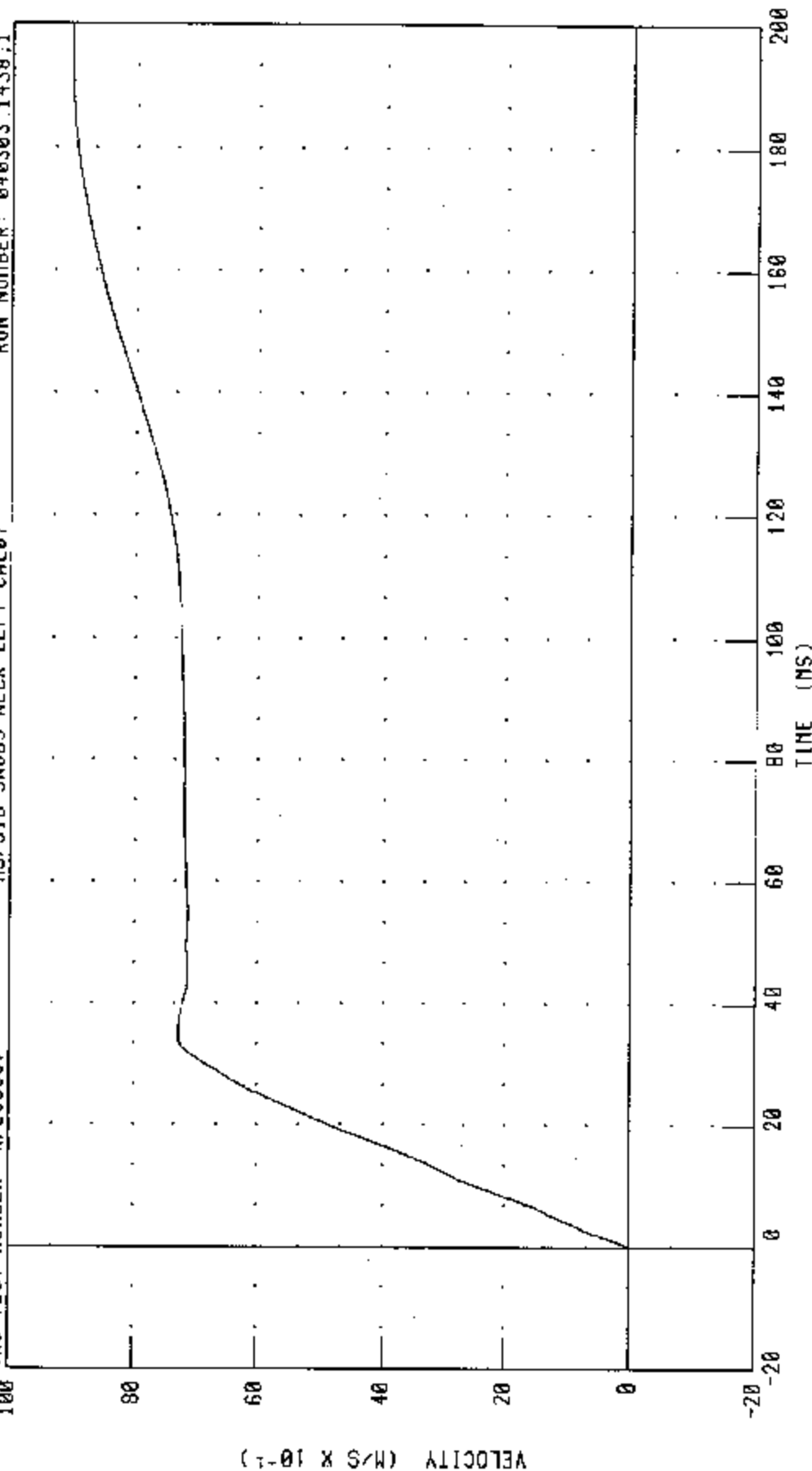
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

INTEGRATED PENDULUM VELOCITY

IRC TEST NUMBER: NFL06507

H3/SID SN065 NECK LEFT CAL07

RUN NUMBER: 040303.1438.1



CHANNEL PENXVI FILTER: CH. CLASS 180

PEAK DATA: 9.07 M/S @ 197.28 MS, -0.01 M/S @ -0.80 MS

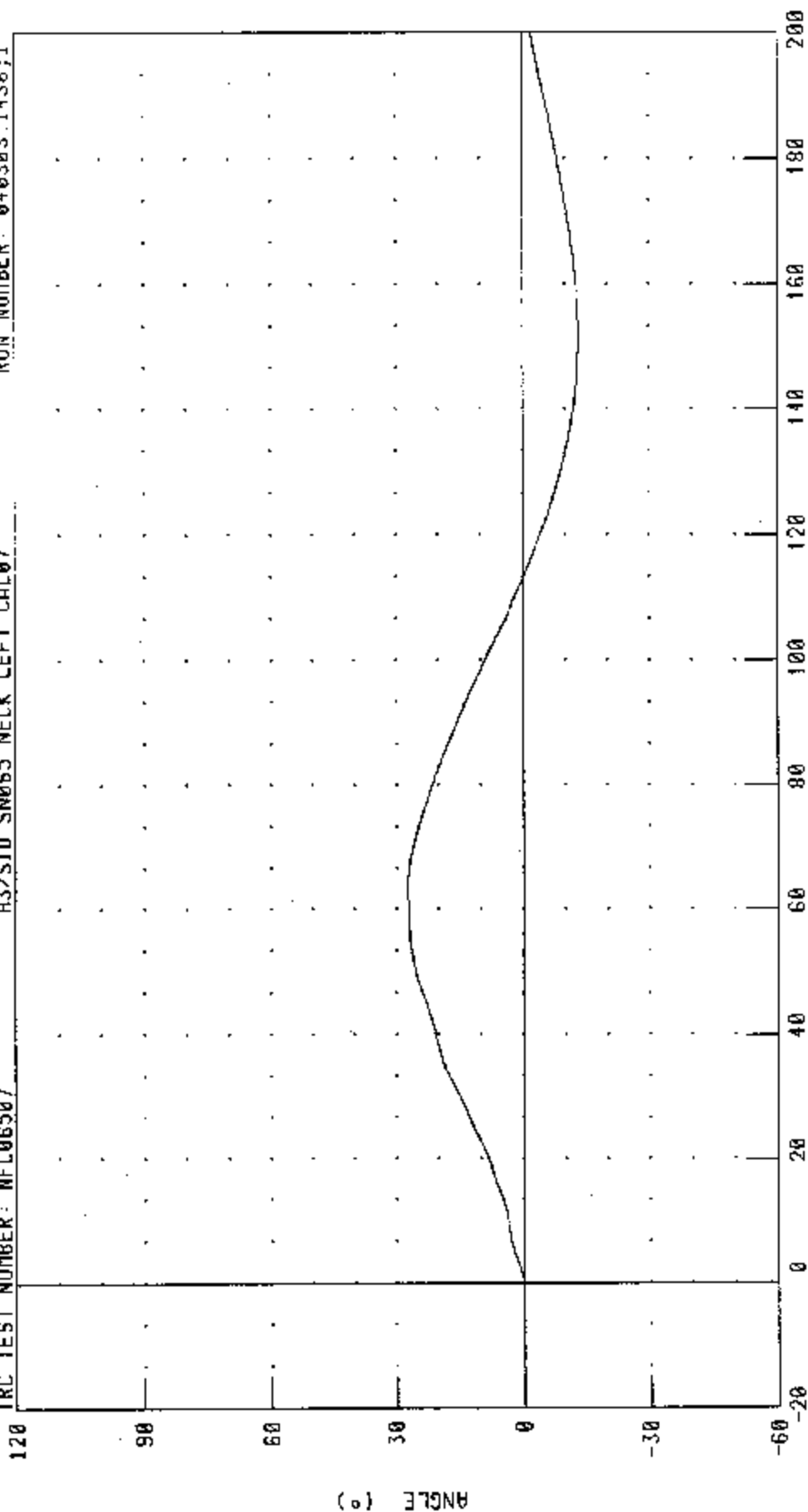
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT BASE OF NECK

H3/SID SN065 NECK LEFT CAL07

RUN NUMBER: 040303.1438;1

TRC TEST NUMBER: NFL06507



PEAK DATA: 27.26 ° @ 63.84 MS; -13.26 ° @ 151.92 MS

FILTER: CH. CLASS 60

CHANNEL: BETA

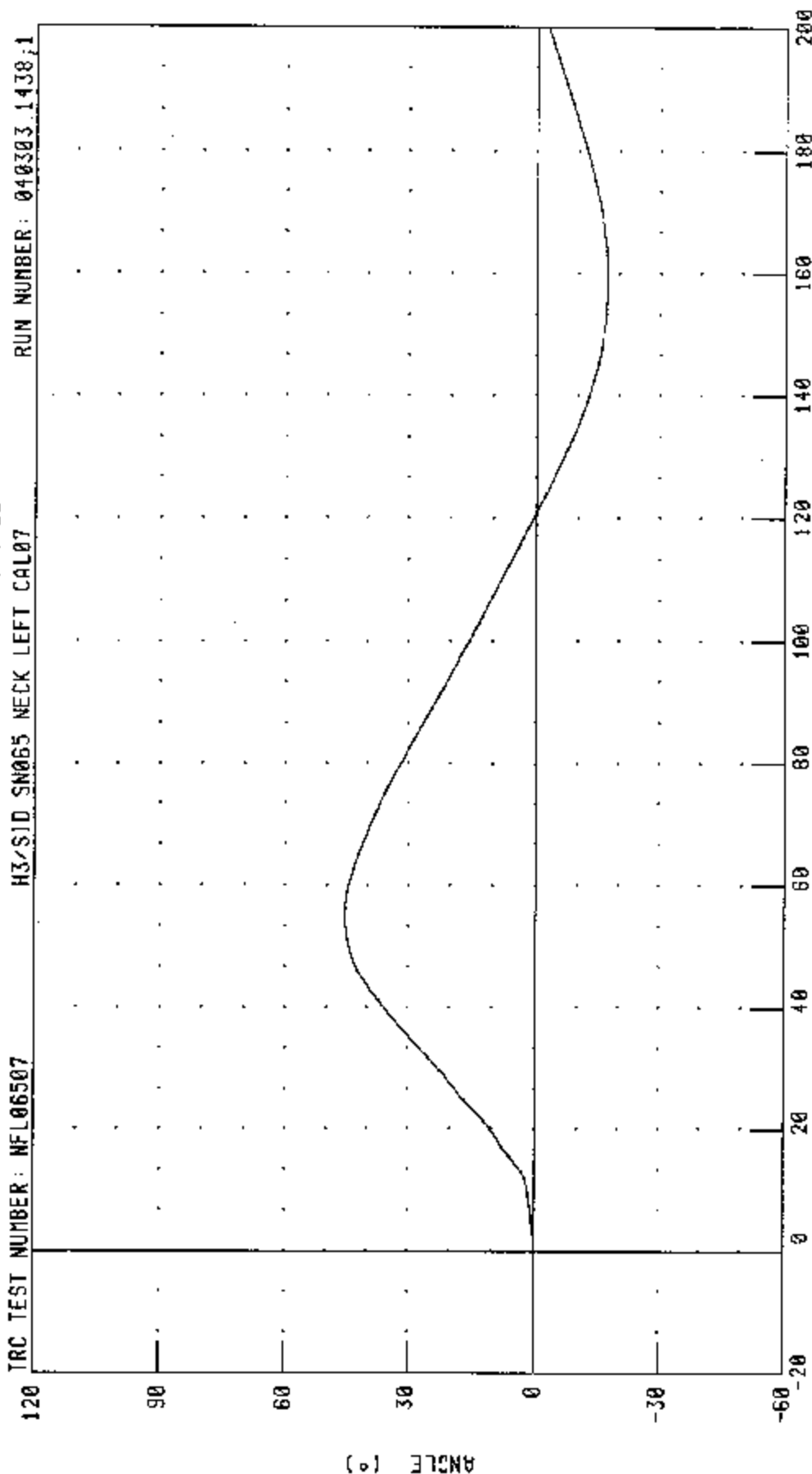
H3/S1D DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: NFI06507

H3/S1D SN065 NECK LEFT CAL07

RUN NUMBER: 040303.1438.1



TIME (MS)

CHANNEL: THETA FILTER: CH. CLASS 60

PEAK DATA: 45.46 ° @ 55.36 MS; -17.14 ° @ 159.04 MS

ANGLE (°)

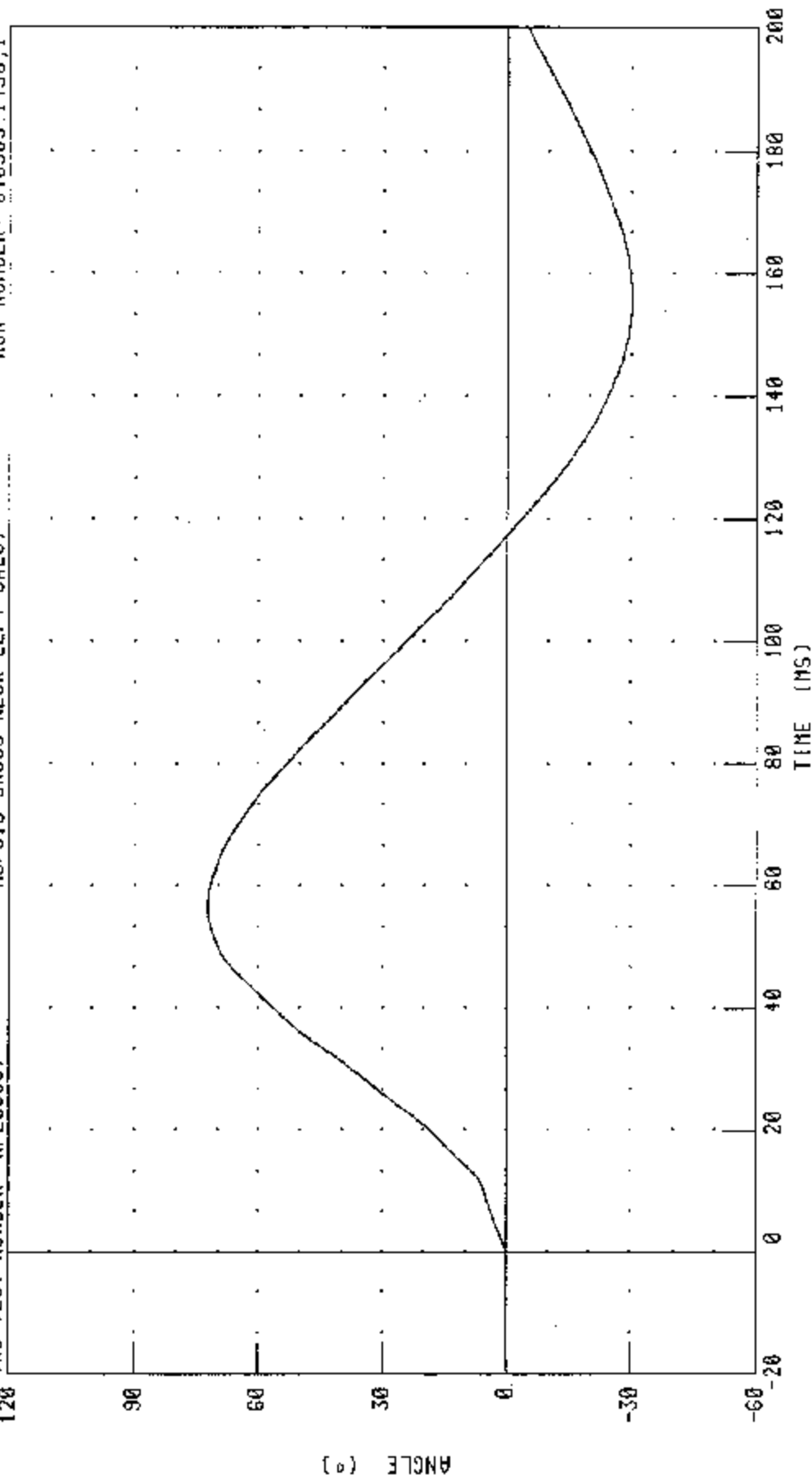
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL ROTATION

TRC TEST NUMBER: NFL06507

H3/SID SN065 NECK LEFT CAL07

RUN NUMBER: 040303.1438;1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 72.35 ° @ 56.56 MS; -30.05 ° @ 155.52 MS

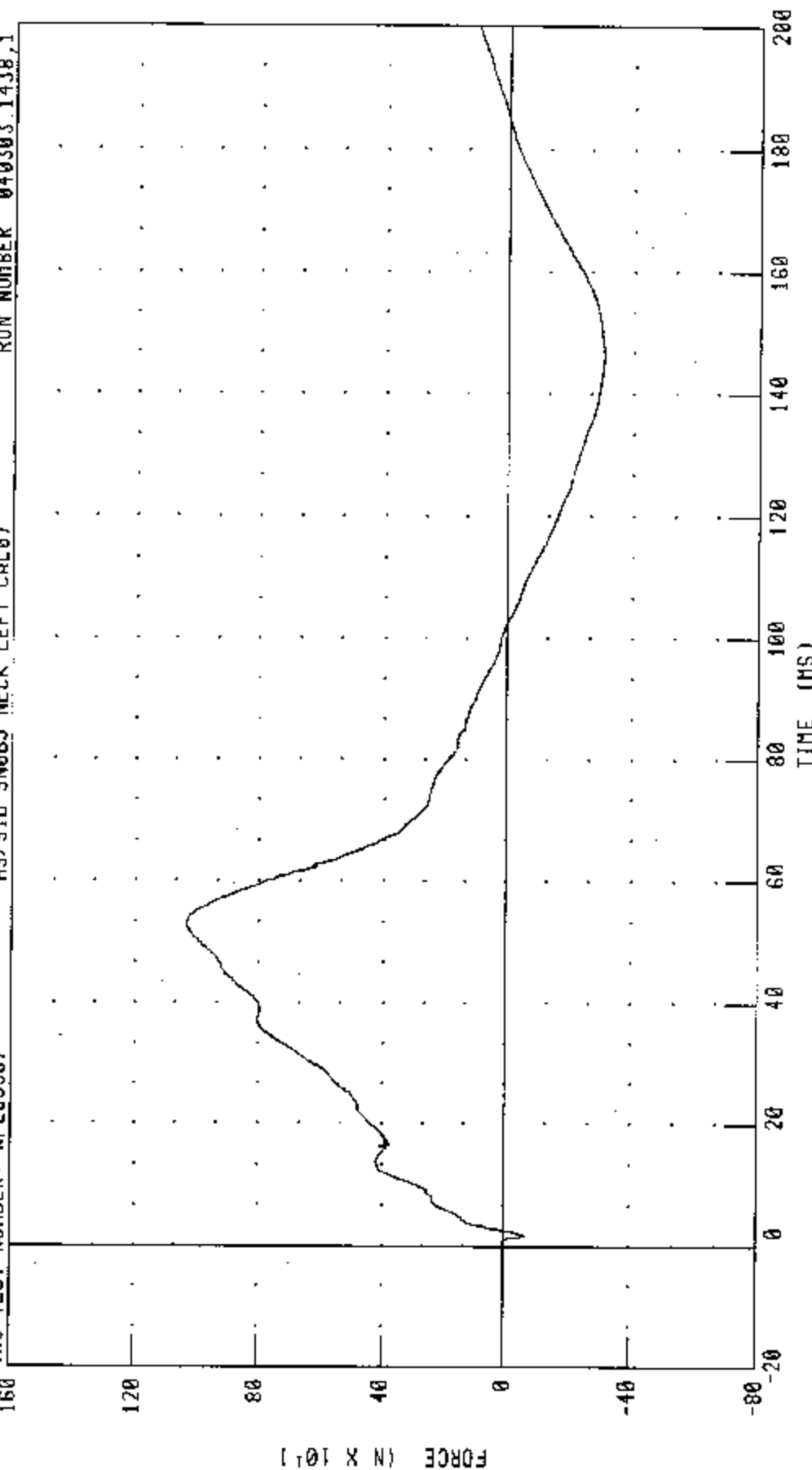
H3/SID DUNNY CALIBRATION -- LEFT LATERAL NECK TEST

NECK FORCE Y AXIS

TRC TEST NUMBER: WFL06507

H3/SID SN065 NECK LEFT CAL07

RUN NUMBER 040303 1438.1



TIME (MS)

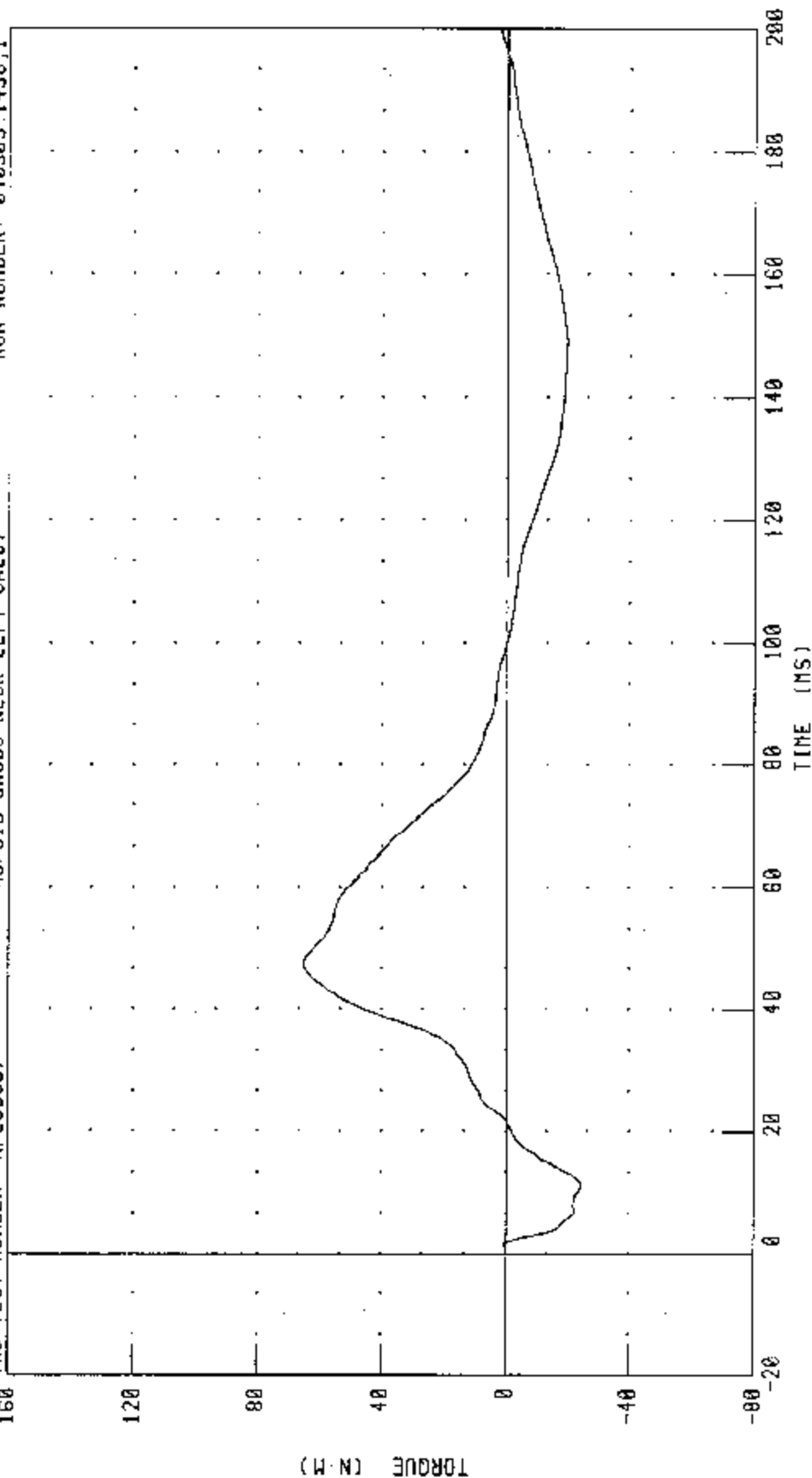
CHANNEL: NEKYF FILTER: CH. CLASS 1000

PEAK DATA 1028.45 N 0 53.20 MS; -305.41 N 8 146.48 MS

H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK MOMENT X AXIS

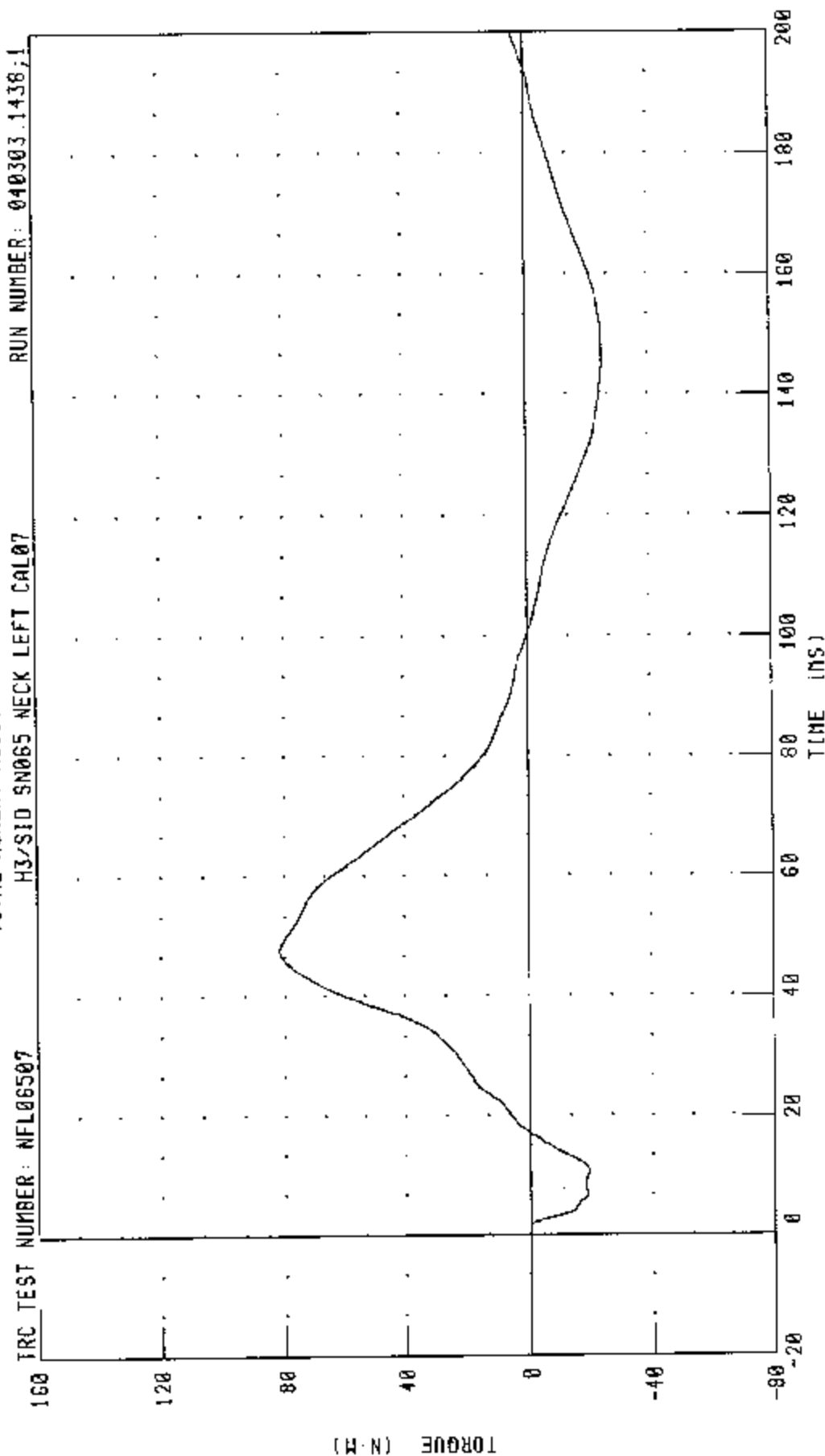
TRC TEST NUMBER: NFL06507 H3/SID SN065 NECK LEFT CAL07 RUN NUMBER: 040303.1438.1



PEAK DATA: 65.89 N·M @ 47.60 MS, -24.78 N·M @ 11.20 MS

CHANNEL NEKXN FILTER: CH. CLASS 600

H3/S10 DUMMY CALIBRATION -- LEFT LATERAL NECK TEST
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



PEAK DATA: 81.76 N·M @ 47.76 MS; -24.97 N·M @ 148.56 MS

CHANNEL: NEKOM FILTER: CH. CLASS 600

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

03-APR-03

LEFT SIDE CONFIGURATION

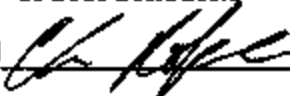
TRC INC.

TEST NO: STL06507A

572F SID SN065 L.THORAX CAL07

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	41.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.31 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	41.9 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	42.4 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	21.2 G

TEST MEETS SPECIFICATIONS

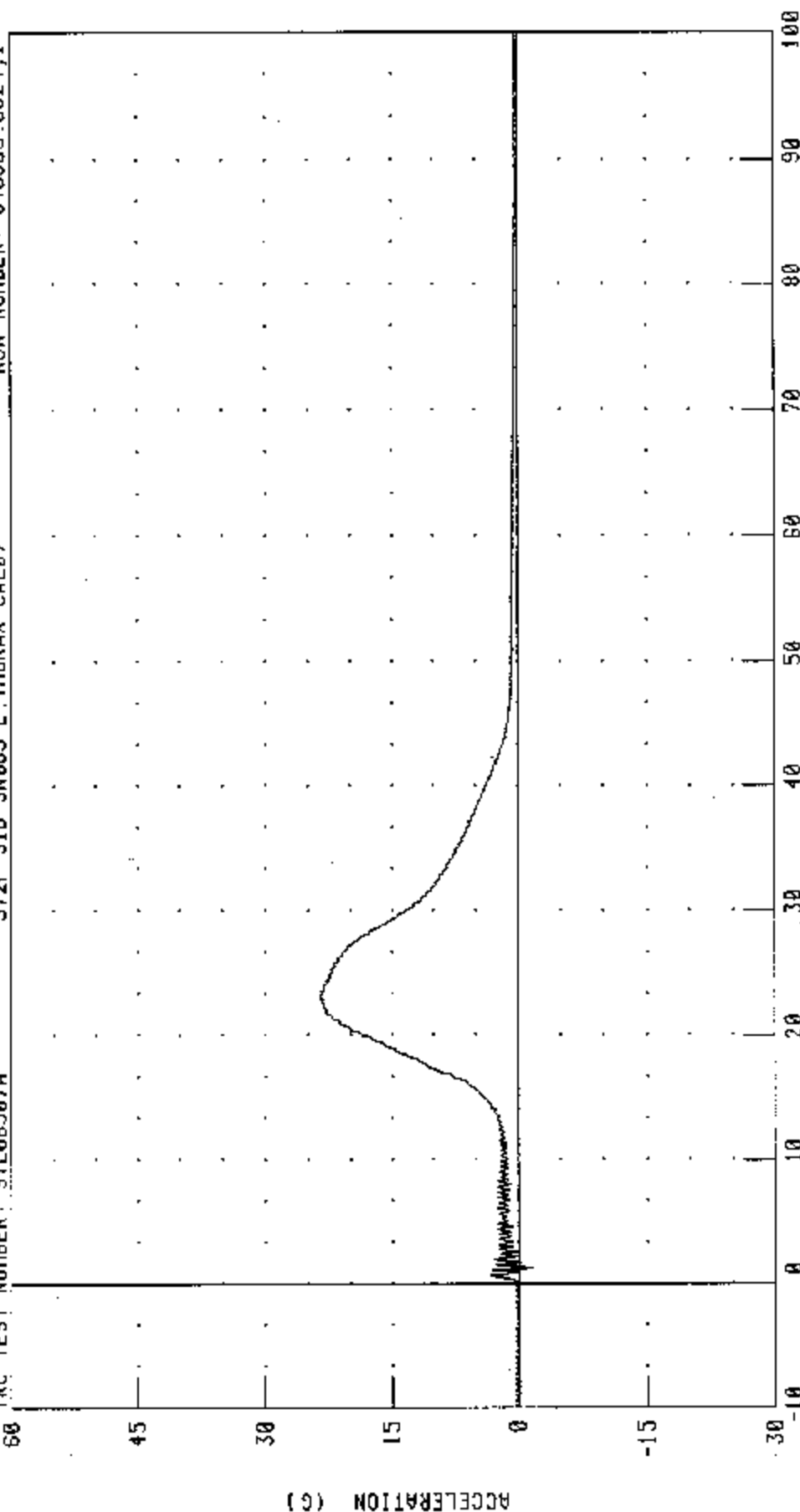
TECHNICIAN 

RUN NUMBER: 040303.0823;1

PART 572-F S.I.O. THORAX CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

TRC TEST NUMBER: STL06507A 572F SID SN065 L THORAX CAL07 RUN NUMBER: 040303.0824.1

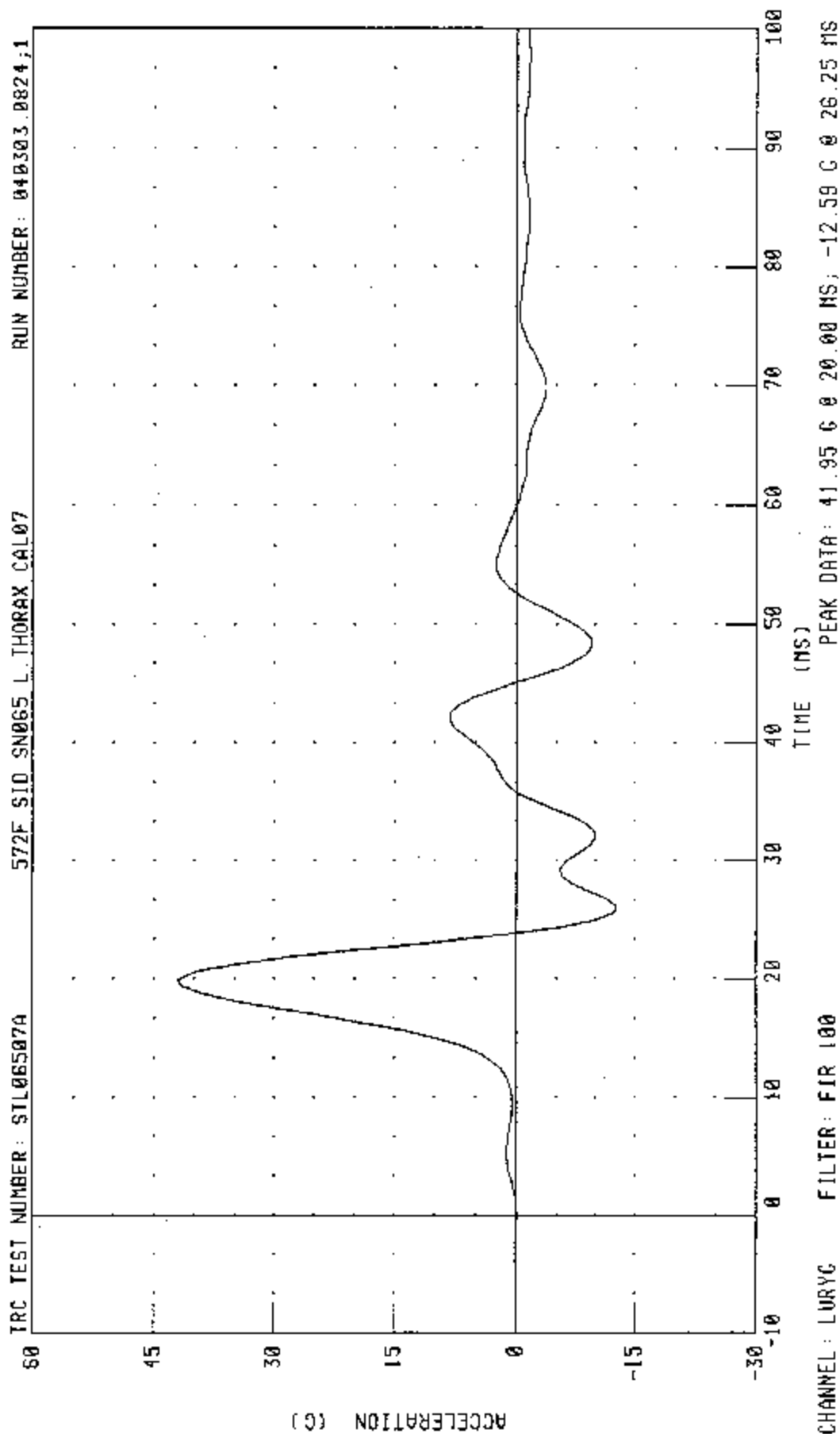


TIME (MS)

PEAK DATA: 23.72 G 23 12 MS; -1 67 0 1 28 MS

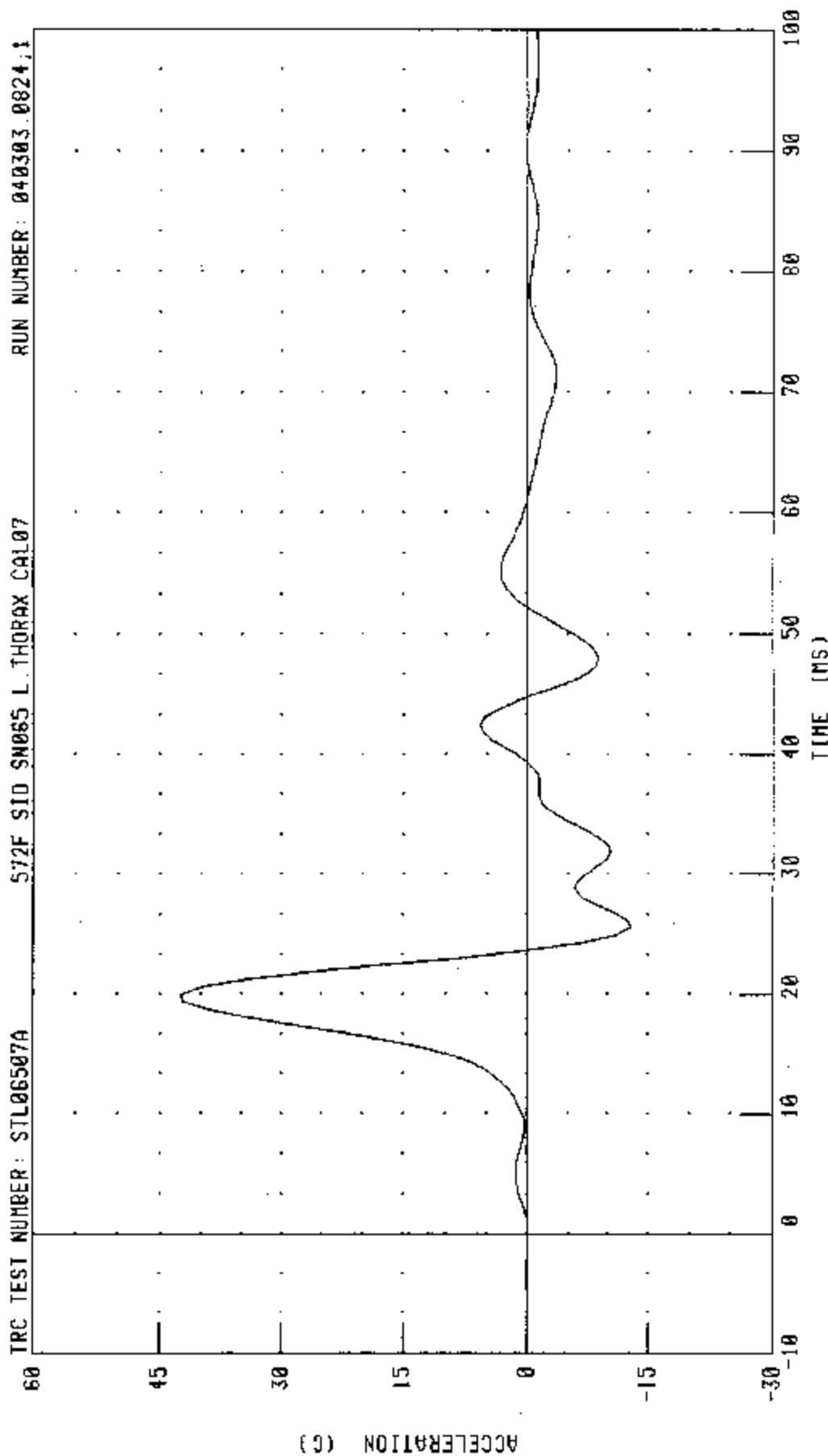
CHANNEL: PENXC FILTER: CH. CLASS 1000

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)
LEFT UPPER RIB ACCELERATION Y AXIS



CHANNEL: LURYC FILTER: FIR 100

PART 572-F S.I.D THORAX CALIBRATION - (LEFT SIDE IMPACT)
 LEFT LOWER RIB ACCELERATION Y AXIS



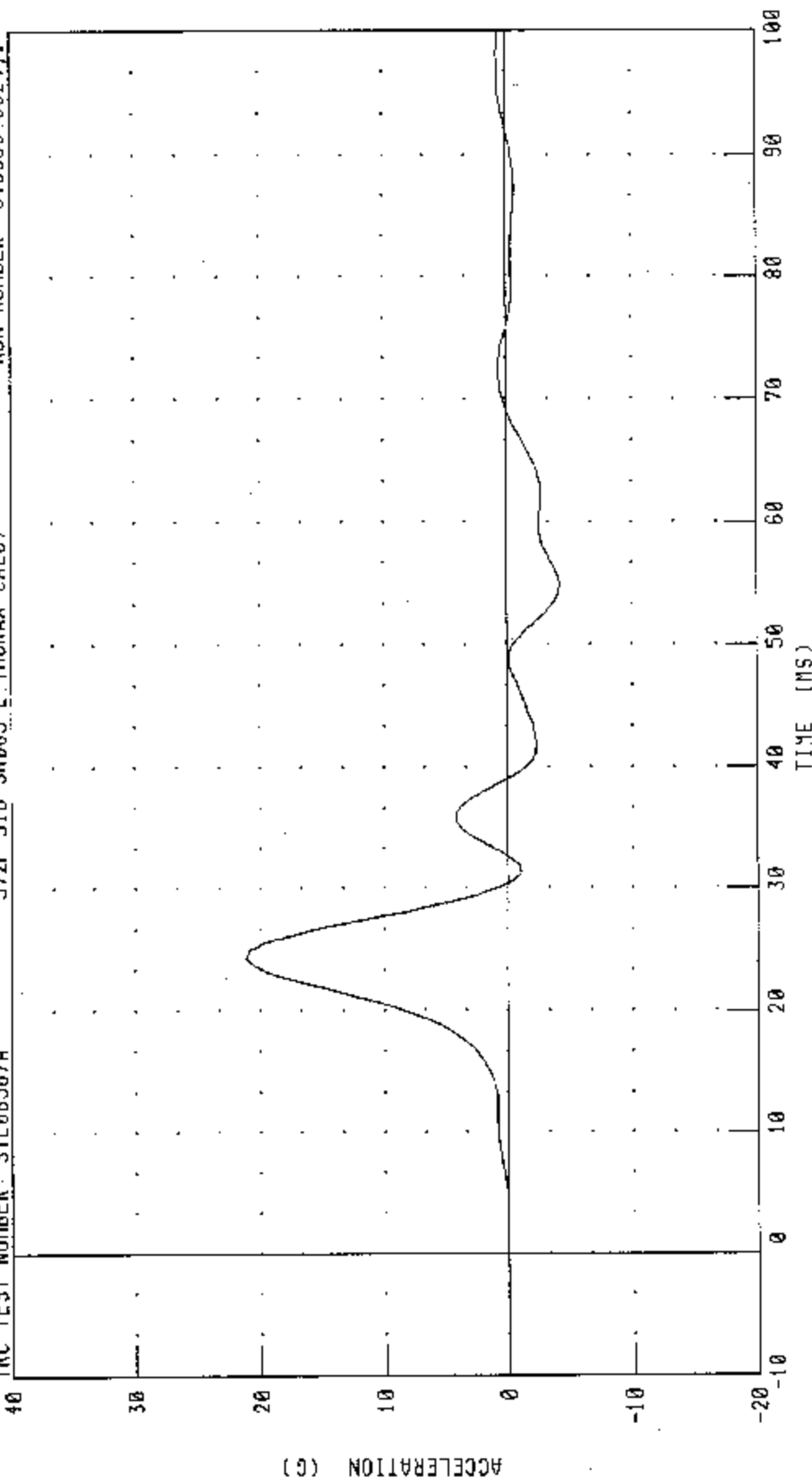
PEAK DATA: 42.36 G @ 20.00 MS, -12.80 G @ 25.63 MS

CHANNEL: LLRYC FILTER: FIR L00

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

TRC TEST NUMBER: ST106507A 572F SID SN065 L THORAX CAL07 RUN NUMBER: 040303.0824.1



CHANNEL: T12VG FILTER: FIR 100

PEAK DATA: 21 18 G @ 24.38 MS, -4.24 G @ 55.00 MS

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 03-Apr-03

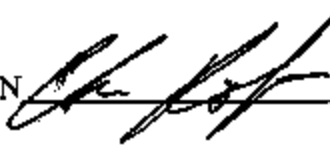
TRC, INC.

TEST NO: 065C07FF1

572B SN 065 TORSO FLEX CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6° C	21.7 °C
RELATIVE HUMIDITY	10 - 70 %	50 %
FORCE AT 0 DEG. FLEXION	-27 - 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 - 151 N	111.2 N
FORCE AT 30 DEG OF FLEXION	151 - 205 N	164.6 N
FORCE AT 40 DEG OF FLEXION	205 - 258 N	218.0 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	9 °

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

572B Abdomen Compression Test

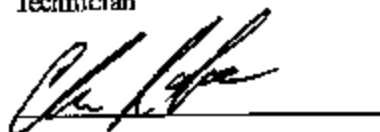
HHI SID Serial No. 065 Calibration No. 07 - 1

Test Date 04/03/2003

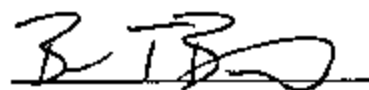
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	6.7 - 8.2 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician



Approved



04.03.2003 13:41:56 216

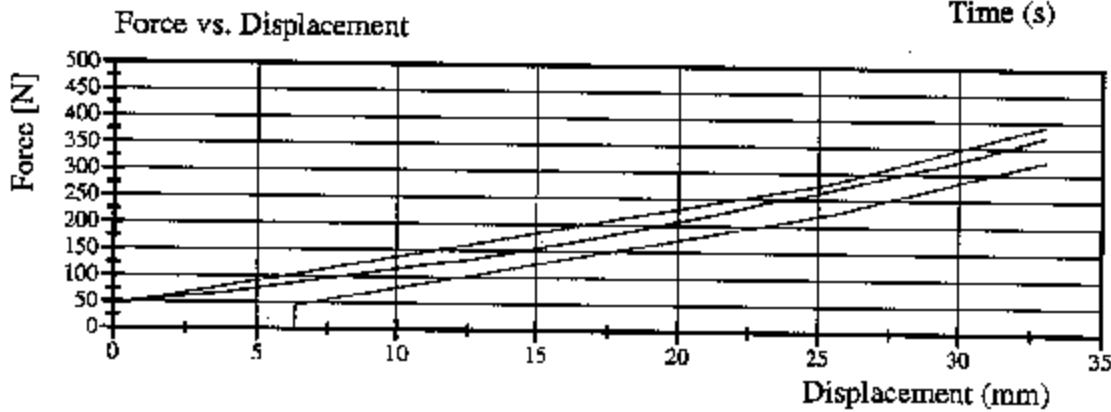
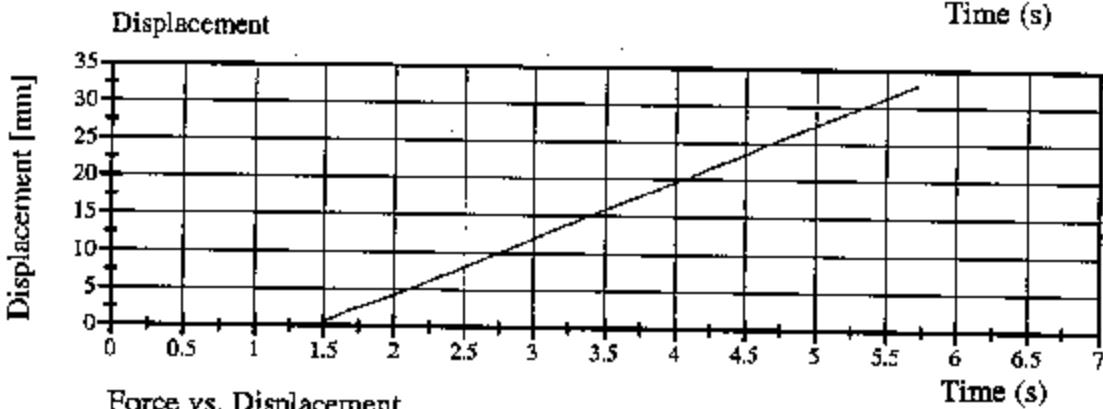
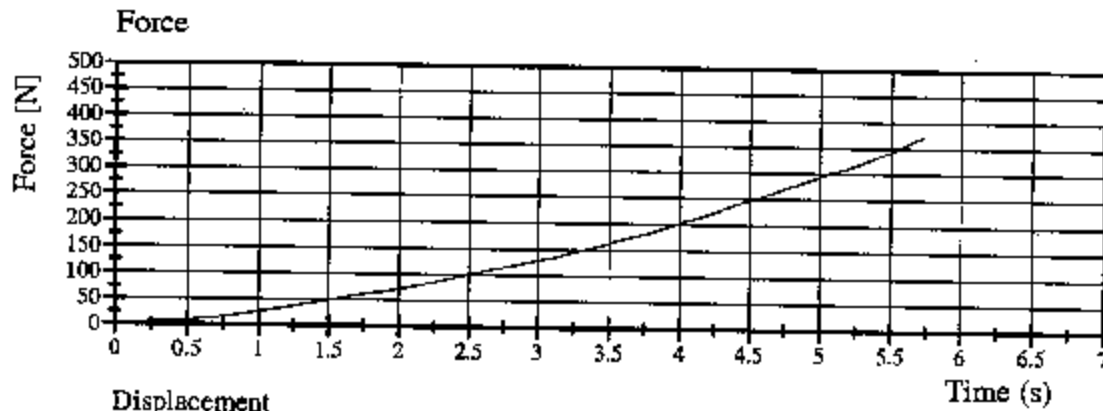


Transportation Research Center Inc.

572B Abdomen Compression Test

HII SID Serial No. 065 Calibration No. 07 - 1

Test Date 04/03/2003



04.03.2003 13:41:58 216



TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

03-APR-03

LEFT SIDE CONFIGURATION

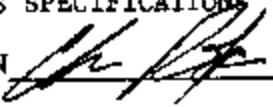
TRC INC.

TEST NO: SPL06507

572F SNO65 LEFT PELVIS CAL07

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.28 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	53.8 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.9 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 040303.0744;1

PART 572-F S I D PELVIS CALIBRATION - (LEFT SIDE IMPACT)

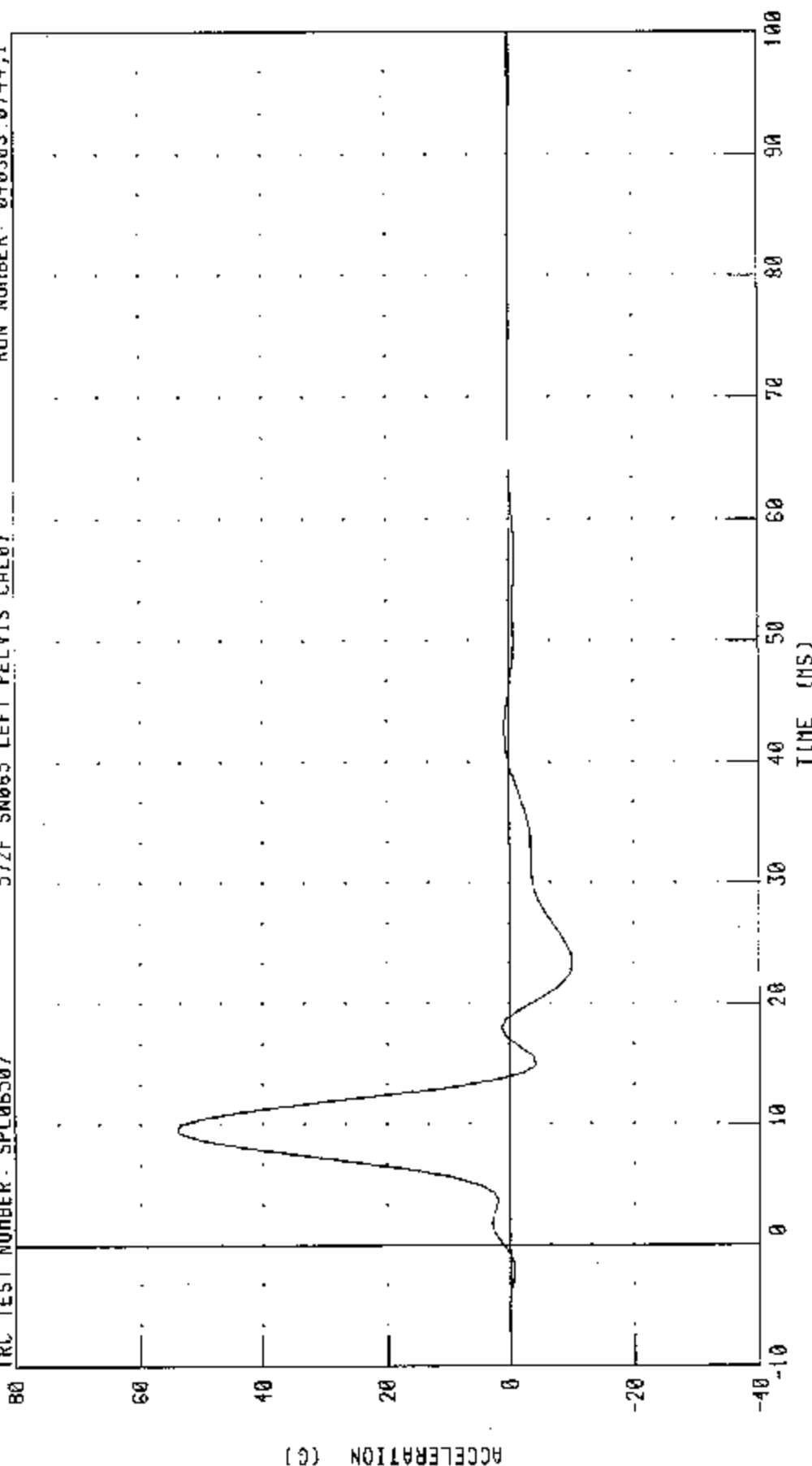
PELVIS ACCELERATION Y AXIS

572F SN065 LEFT PELVIS CAL07

TRC TEST NUMBER - SPL06507

572F SN065 LEFT PELVIS CAL07

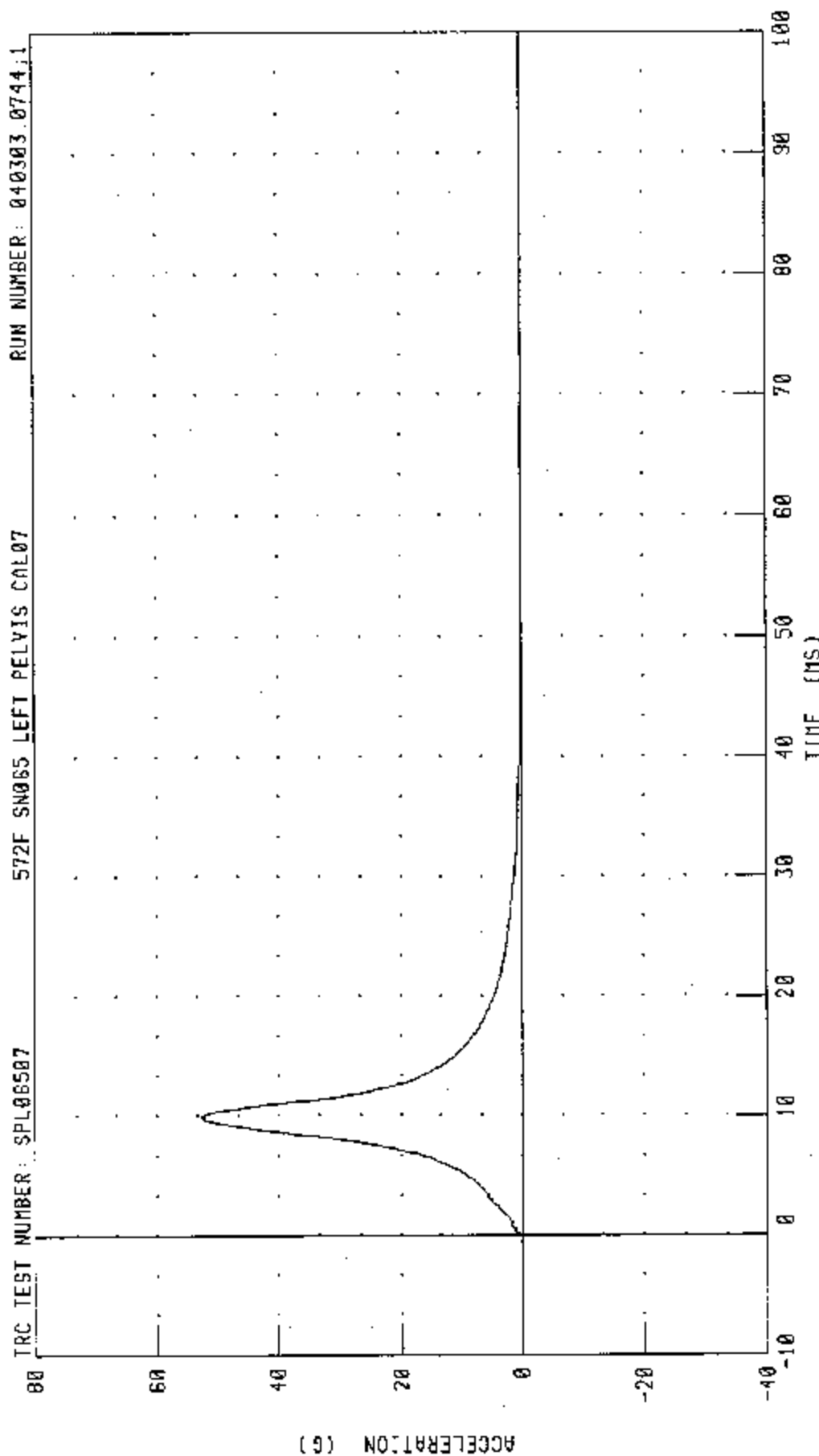
RUN NUMBER: 040303.0744;1



CHANNEL: PEVYG FILTER: FIR 100

PEAK DATA: 53.85 G @ 9.37 MS, -10.28 G @ 23.13 MS

PART 572 F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)
 PENDULUM DECELERATION



PEAK DATA: 52.63 G @ 9.92 MS; -0.10 G @ 61.36 MS

CHANNEL: PENXC FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

03-FEB-03

TRC INC.

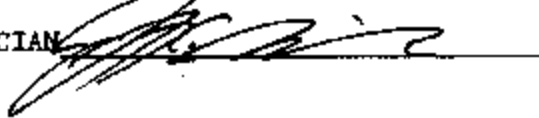
572F SN065 DAMPER TEST CALO2

TEST NUMBERS: DP06502A, DP06502B, DP06502C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	46.0 %
VELOCITY	FORCE	667 - 925 N	791 N
2.71 M/S	DISPLACEMENT	29.7 - 34.5 MM	31.1 MM
VELOCITY	FORCE	1706 - 2072 N	1715 N
4.24 M/S	DISPLACEMENT	31.6 - 37.2 MM	36.5 MM
VELOCITY	FORCE	3784 - 4495 N	4243 N
6.12 M/S	DISPLACEMENT	33.3 - 39.6 MM	37.2 MM

DAMPER SETTING = 5.5

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 020303.0805;1

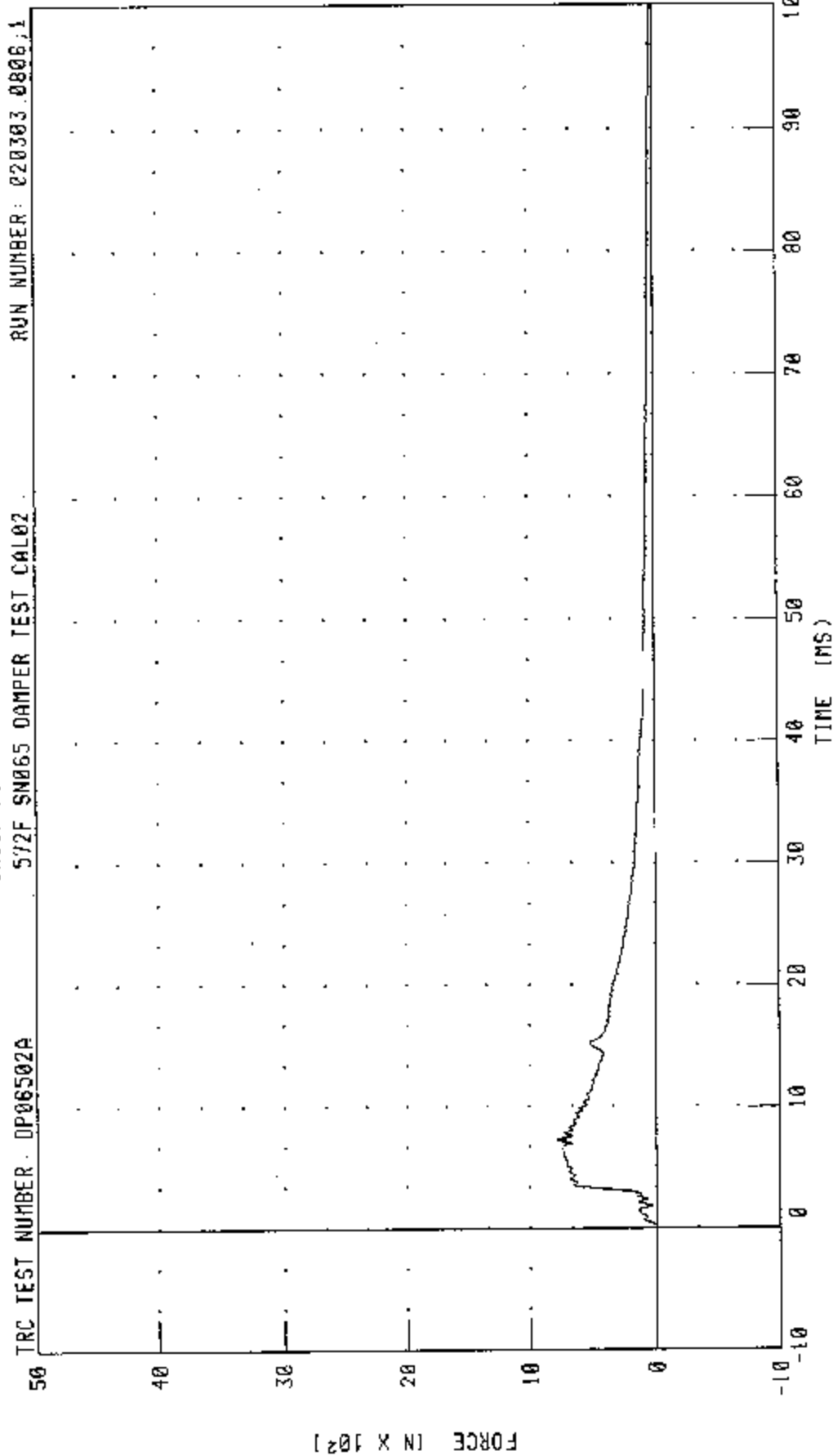
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3 0 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP06502A

572F SN065 DAMPER TEST CAL02

RUN NUMBER: 020303.0806.1



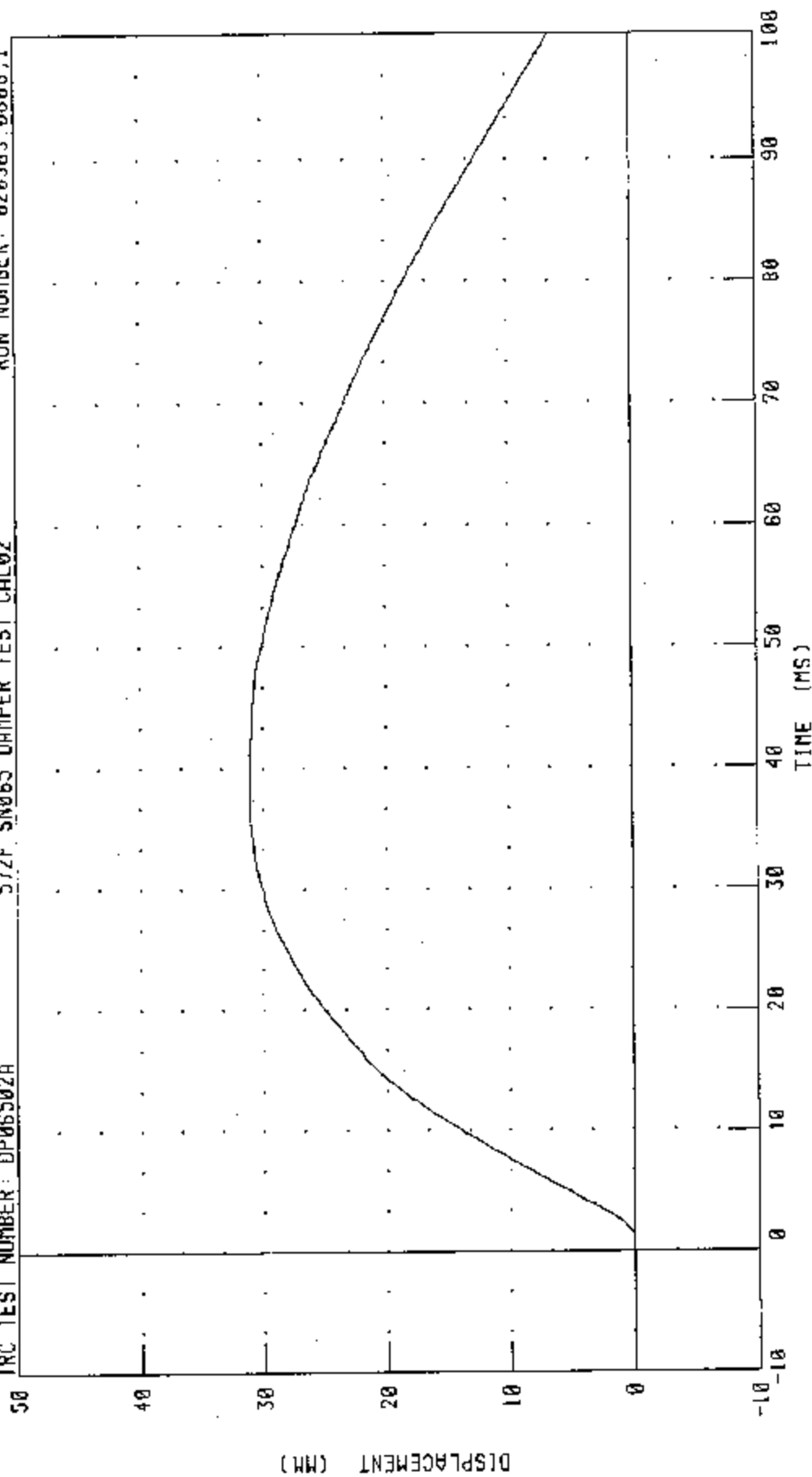
CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 790.76 N @ 7.36 MS; -1.99 N @ -6.96 MS

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP06502A 572F SN065 DAMPER TEST CAL02 RUN NUMBER: 020303.0806.1



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 31.08 MM @ 37.76 MS, 0.00 MM @ -8.00 MS

PART 572-F S.I.O. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC.)

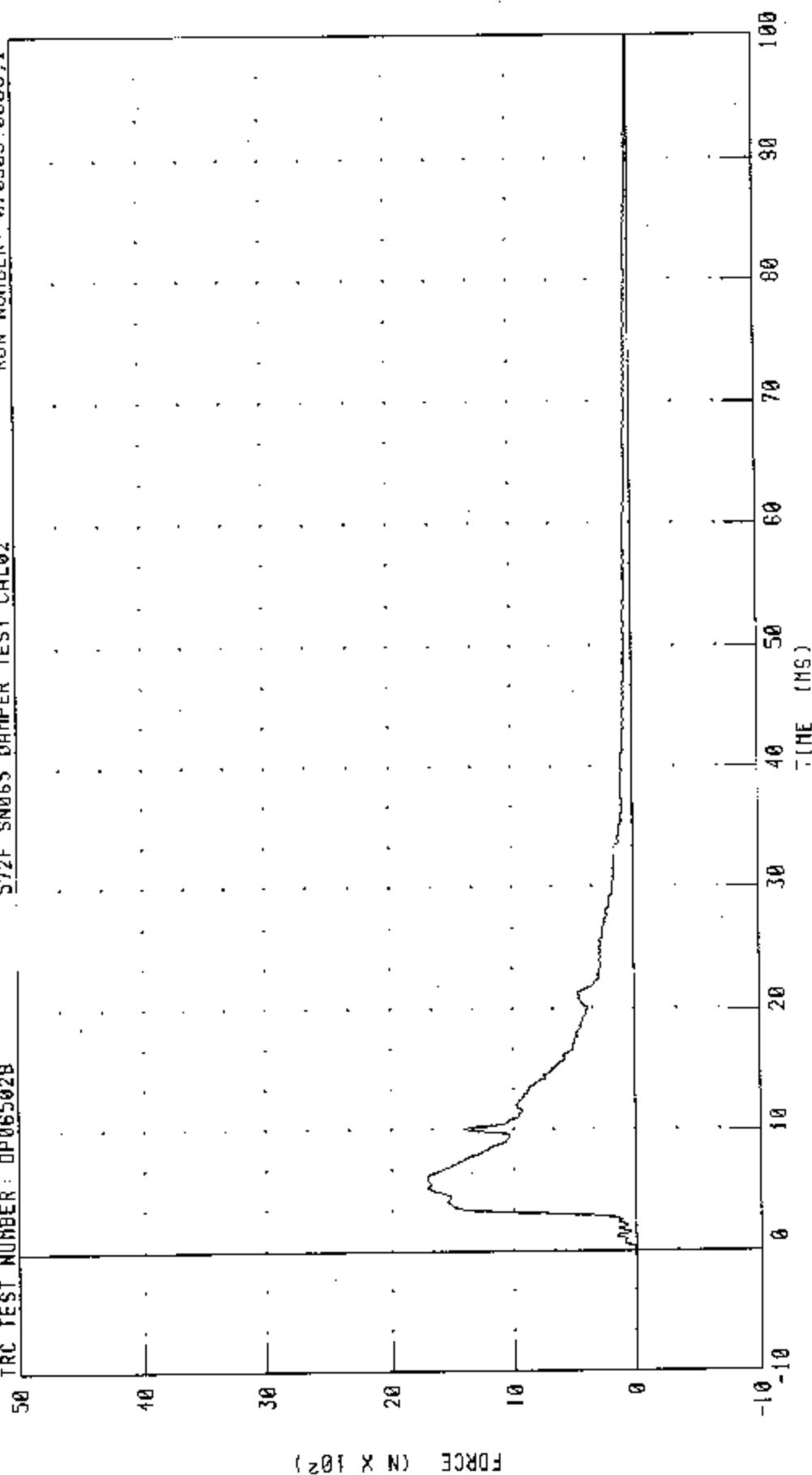
SHOCK ABSORBER RESISTIVE FORCE

572F SN065 DAMPER TEST CAL02

TRC TEST NUMBER: DP06502B

572F SN065 DAMPER TEST CAL02

RUN NUMBER: 020303.0806.1



PEAK DATA: 1714 69 N @ 6.16 MS; -1.52 N @ -8.24 MS

CHANNEL: DANPF FILTER: CIL CLASS 1000

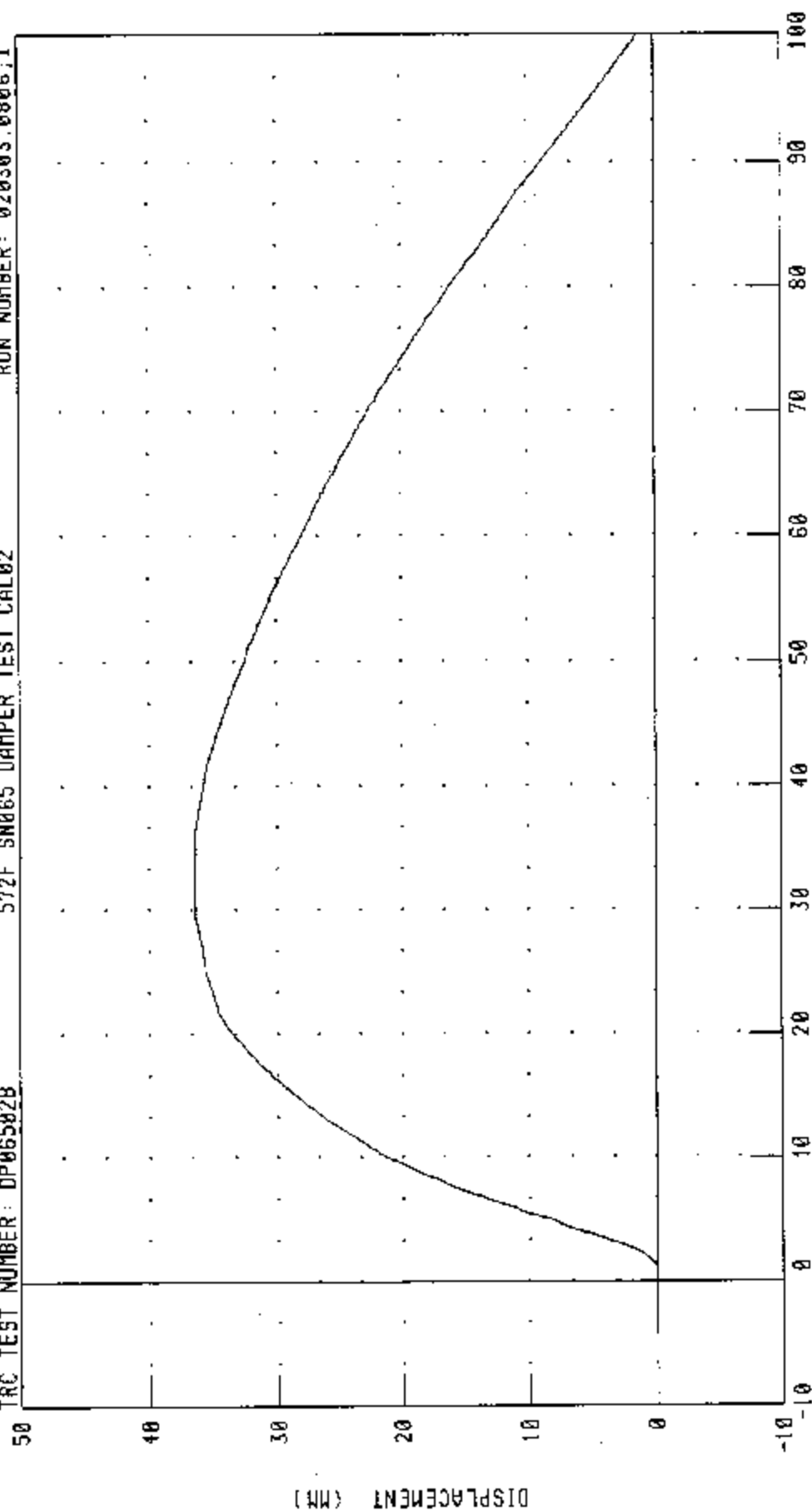
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP06502B

572F SN065 DAMPER TEST CAL02

RUN NUMBER: 020303.0006.1



TIME (MS)

CHANNEL: CSTYO FILTER: CIL CLASS 1000

PEAK DATA: 36.48 MM @ 31.44 MS; -0.01 MN @ -2.80 MS

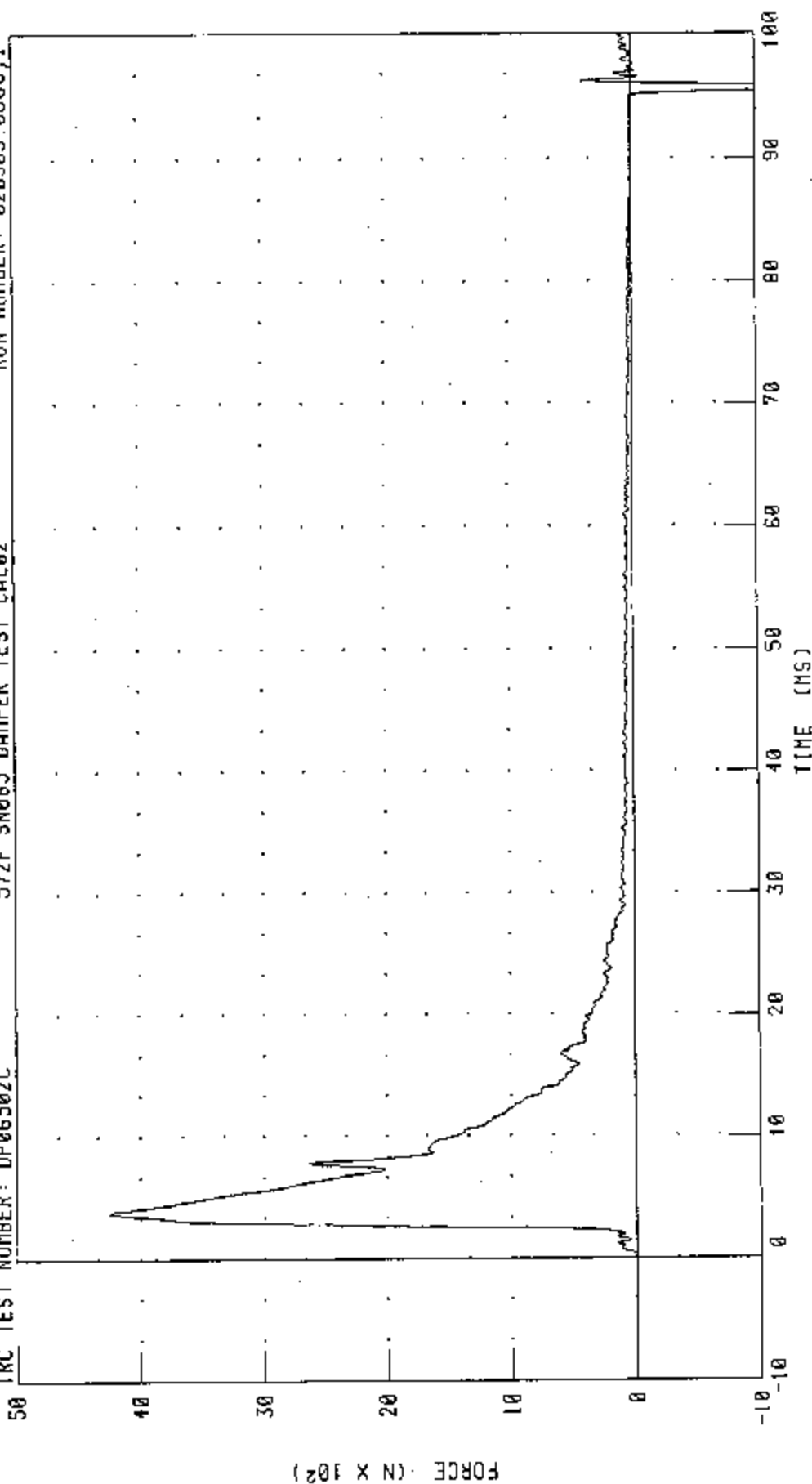
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 N/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN065 DAMPER TEST CAL02

TRC TEST NUMBER: DP06502C

RUN NUMBER: 020303.0806,1



CHANNEL: DAMPF FILTER: CH. CLASS 1000

PEAK DATA: 4243.19 N @ 3.76 MS, 1446.15 N @ 95.60 MS

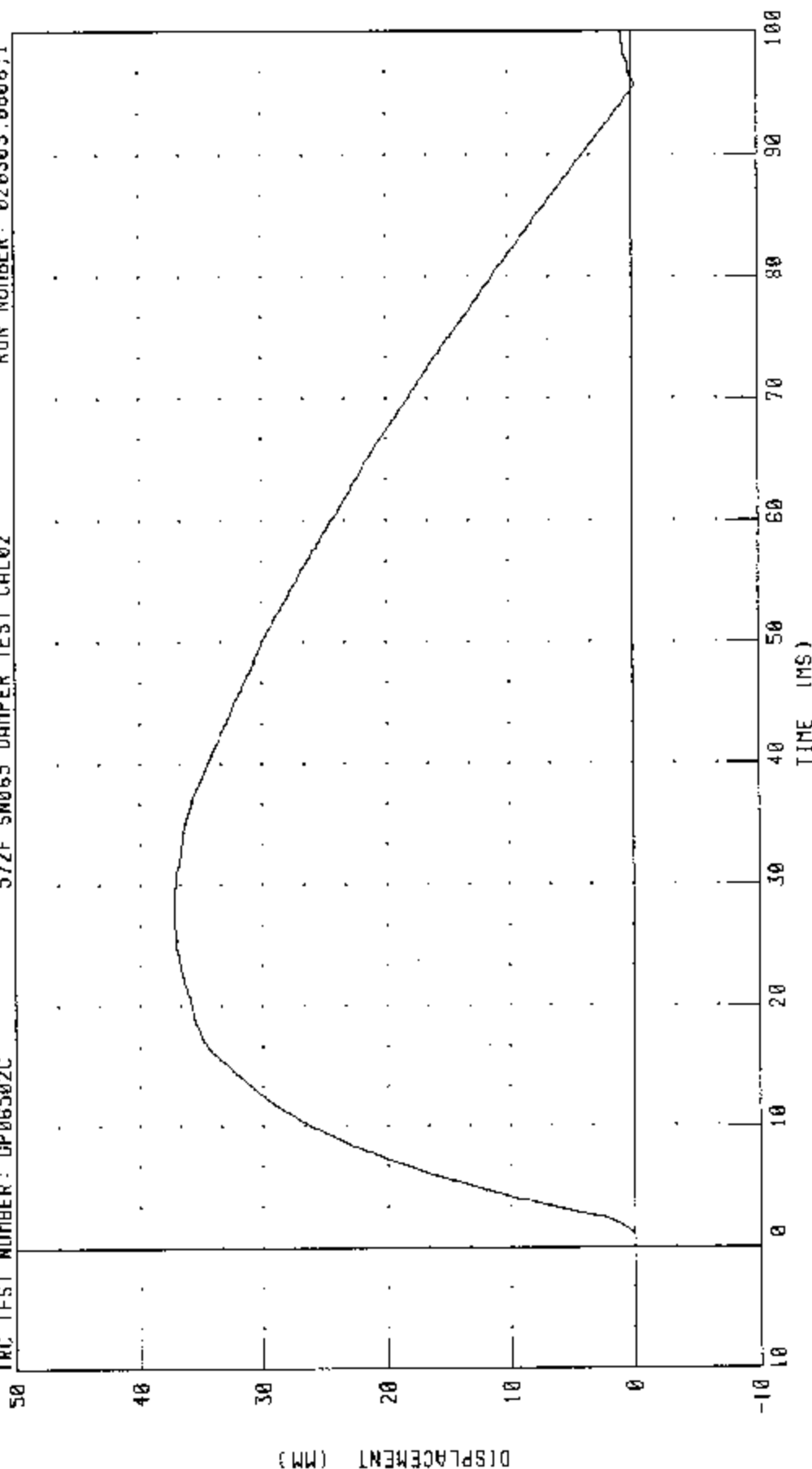
PART 572-F S.I.D THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP06502C

572F SN065 DAMPER TEST CAL02

RUN NUMBER: 020303.0006;1



PEAK DATA: 37.18 MM @ 28.00 MS, -0.26 MM @ 95.00 MS

CHANNEL: CSTVD FILTER: CH. CLASS 1000

Calibration Test Results

Pre-Test

SID: 028

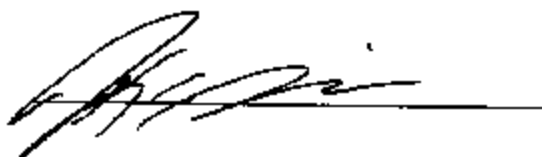
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements (tested on February 3, 2003, for a previous calibration series).

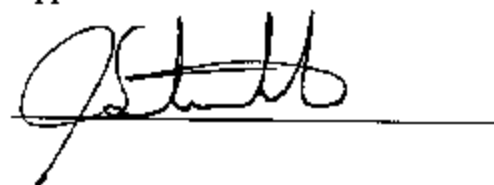
Transportation Research Center Inc.
572F SID Dummy
External Dimensions
Serial No. 028 Calibration No. 04

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	896 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	504 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Rib From Backline	RD	228.6 - 241.3 mm	233 mm	Yes
Knee Pivot From Backline	KH	510.5 - 525.8 mm	514 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	498 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	373 mm	Yes
Top Rib Width From CVL	RW-1	165.1 - 180.3 mm	172 mm	Yes
Bottom Rib Width From CVL	RW-2	165.1 - 180.3 mm	170 mm	Yes
Difference Between Top & Bottom Rib Width from CVL		≤ 2.5 mm	2.0 mm	Yes

Technician



Approved



TRE

TRANSPORTATION RESEARCH CENTER INC.

LATERAL HEAD DROP TEST

HYBRID III SID DUMMY

14-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO. HDL02804

572M SID/HIII SN028 HEAD CAL04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 deg. C	21.67 deg. C
RELATIVE HUMIDITY	10 - 70 %	38.00 %
PEAK RESULTANT ACCELERATION	120 - 150 G	143.81 G
PEAK LONGITUDINAL ACCELERATION	15 G MAX	-8.93 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 042103.0934;1

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION X AXIS

572M SID/HIII SN028 HEAD CAL04

IRC TEST NUMBER: HOL02804

120

80

40

0

-40

-80

-120

0

10

20

30

40

50

60

70

80

90

100

TIME (MS X 10⁻¹)

PEAK DATA: 3.86 0 0 4.24 MS, -0.93 G 0 2.24 MS

CHANNEL: HEDXG FILTER: CH. CLASS 1000

RUN NUMBER: 042103.0934.1

ACCELERATION (G)

C-40

030415

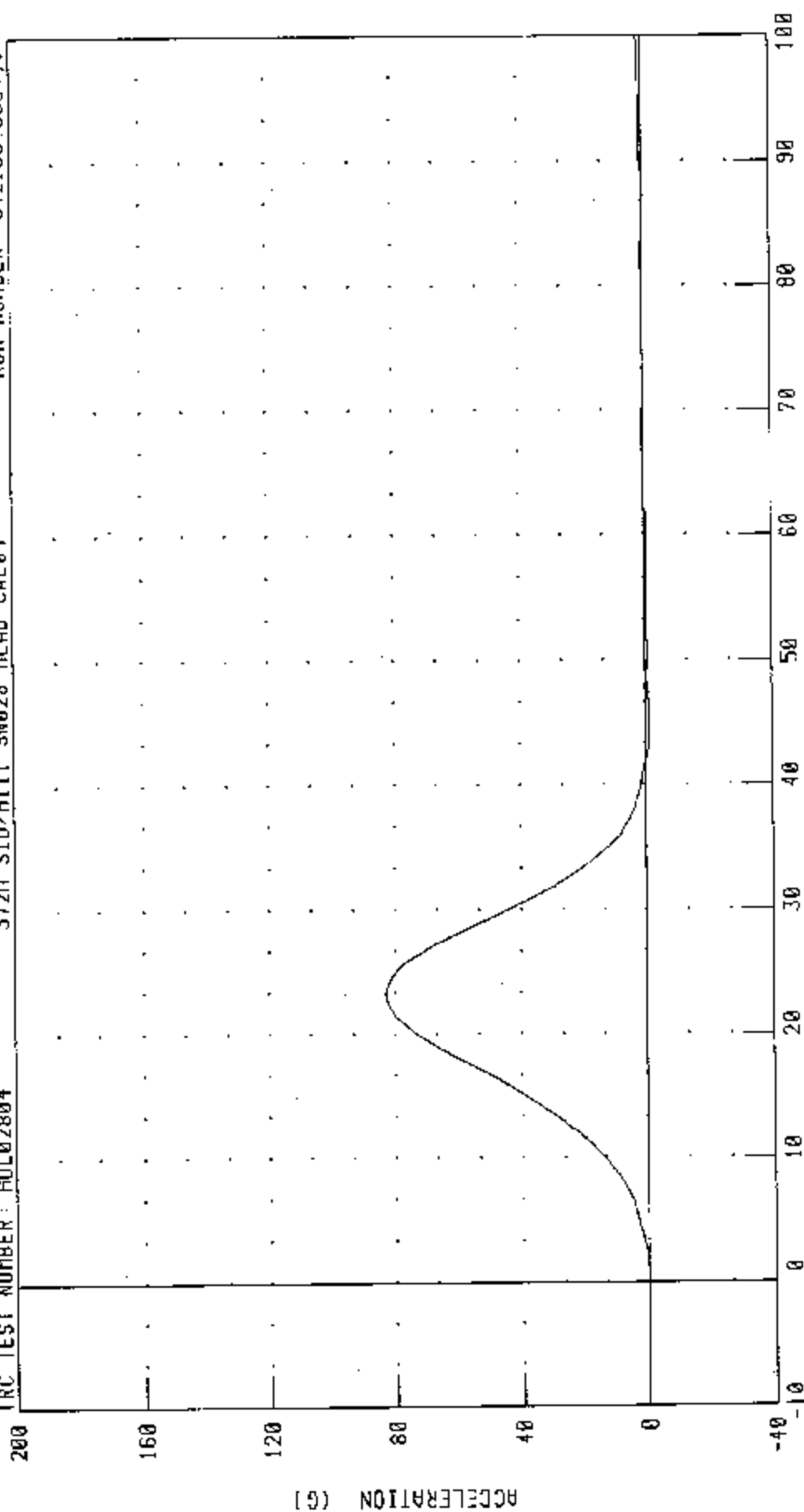
572M SID/HIII GUNNY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION Y AXIS

TRC TEST NUMBER: HUL02804

572M SID/HIII SW028 HEAD CAL04

RUN NUMBER: 042103.0934.1



PEAK DATA: 83.05 G @ 232 MS; -1.58 G @ 448 MS

CHANNEL: HEDYC FILTER: CH. CLASS 1000

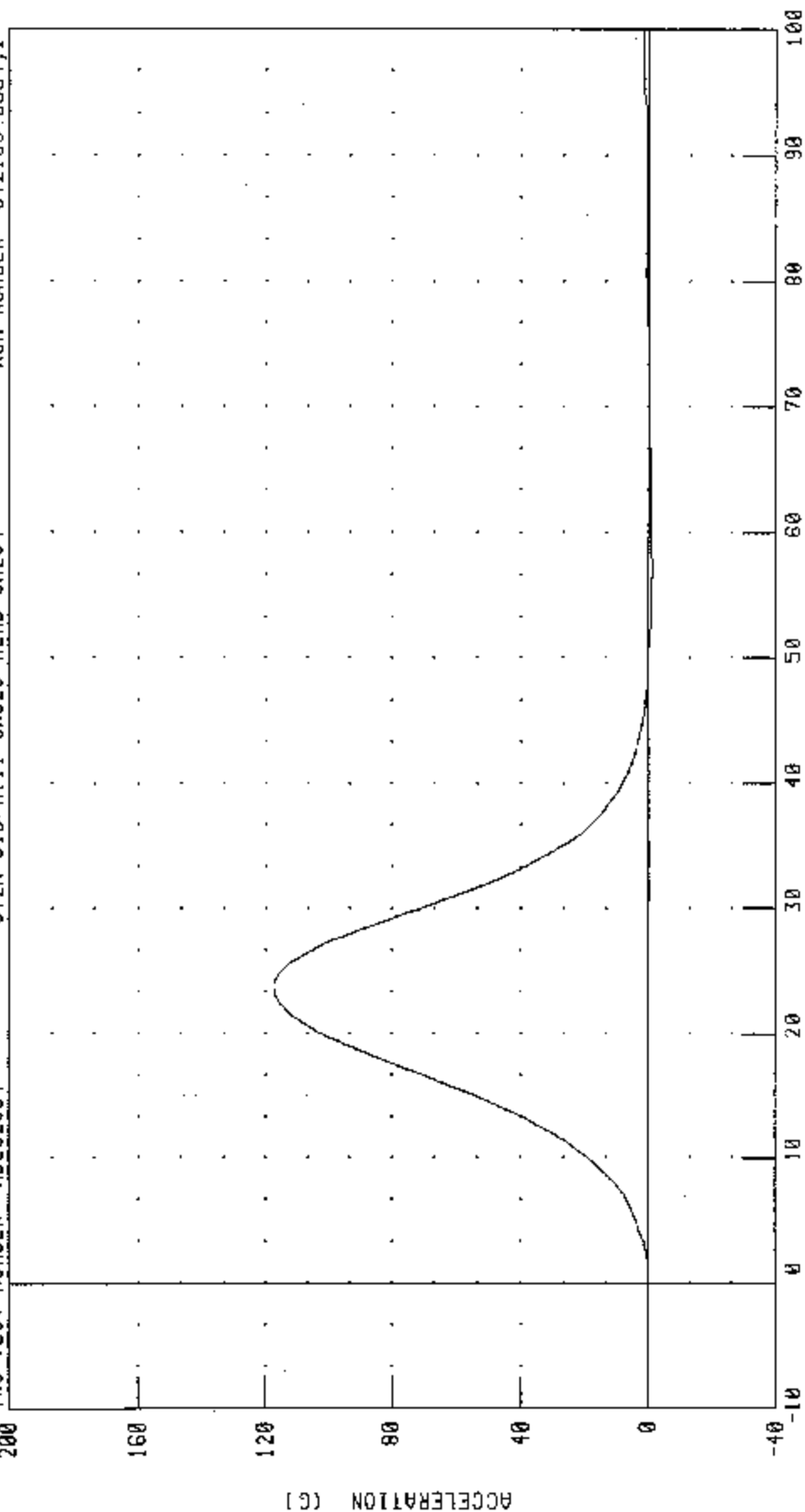
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION Z AXIS

TRC TEST NUMBER: HDL02804

572M SID/HIII SN028 HEAD CAL04

RUN NUMBER: 042103.0934;1



PEAK DATA: 117 44 G @ 2.40 MS; -; 39 G @ 5.60 MS

CHANNEL: HCDZC FILTER: CIB CLASS 1000

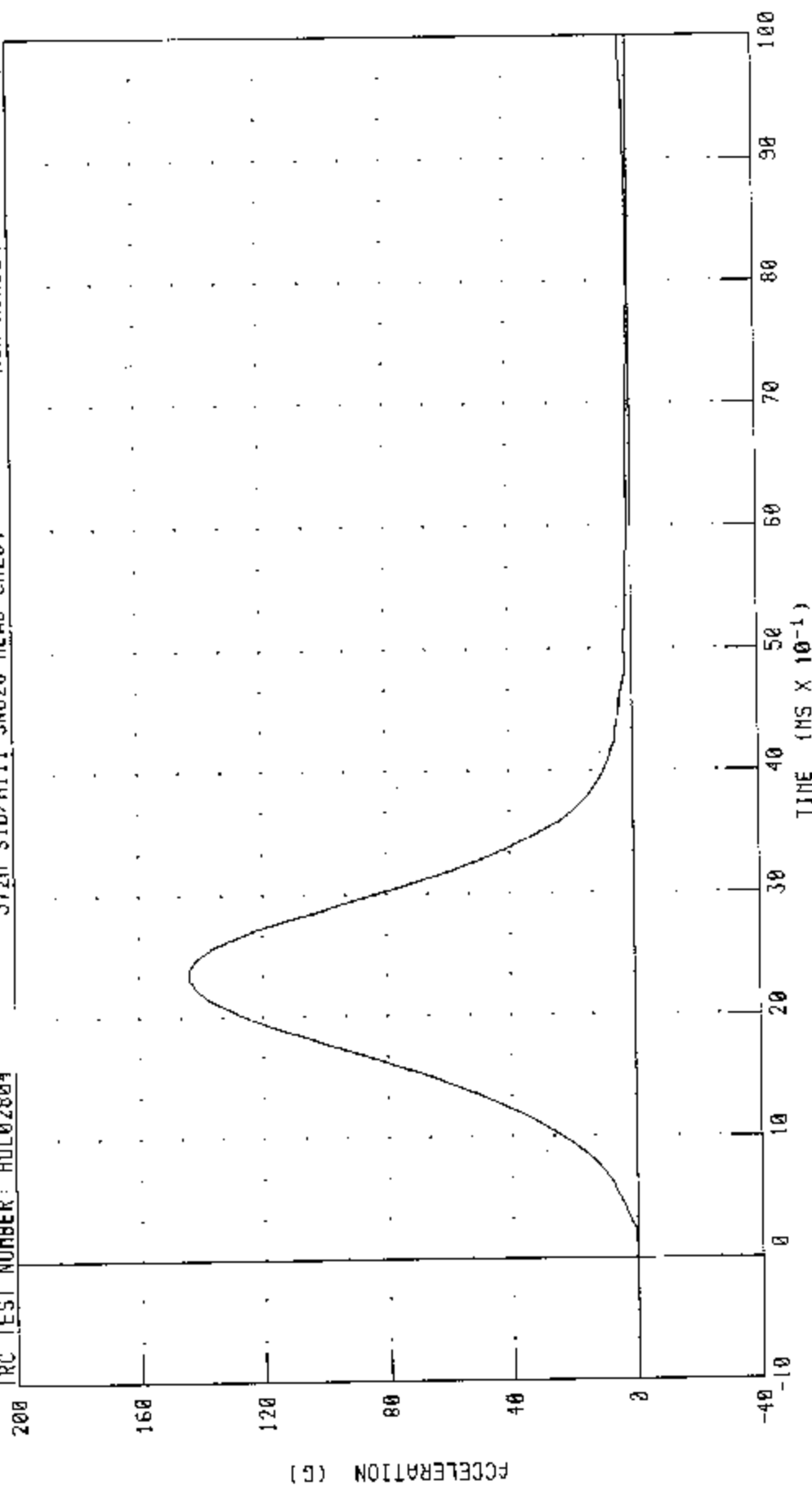
572M SID/HIII DUMMY CALIBRATION --- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD RESULTANT ACCELERATION

RUN NUMBER: 042103.0934,1

TRC TEST NUMBER: H0102804

572M SID/HIII SN028 HEAD CAL04



PEAK DATA: 143.61 G @ 23.2 MS, 0.02 C @ -0.24 MS

CHANNEL: HEDRC FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

LATERAL NECK TEST

HYBRIDIII SID DUMMY

14-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO. NFL02804

H3/SID SNO28 NECK LEFT CAL04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6 - 22.2 deg. C	21.67 deg. C
RELATIVE HUMIDITY	10 - 70 %	35.00 %
IMPACT VELOCITY	6.89 - 7.13 M/S	6.99 M/S
INTEGRATED VELOCITY	10 MS 1.96 - 2.55 M/S	2.43 M/S
	20 MS 4.12 - 5.10 M/S	4.84 M/S
	30 MS 5.73 - 7.01 M/S	6.71 M/S
	40 - 70 MS 6.27 - 7.64 M/S	7.12 - 7.23 M/S
MAXIMUM MIDSAGGITAL PLANE ROTATION	66 - 82 deg.	71.91 deg.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO	58 - 67 MS	59.44 MS
MAXIMUM MOMENT ABOUT OCCIPITAL CONDYLE	73 - 88 NM	83.95 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO	49 - 64 MS	52.56 MS
TIME OF MAXIMUM ROTATION AFTER MAXIMUM MOMENT	2 - 16 MS	8.48 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN 

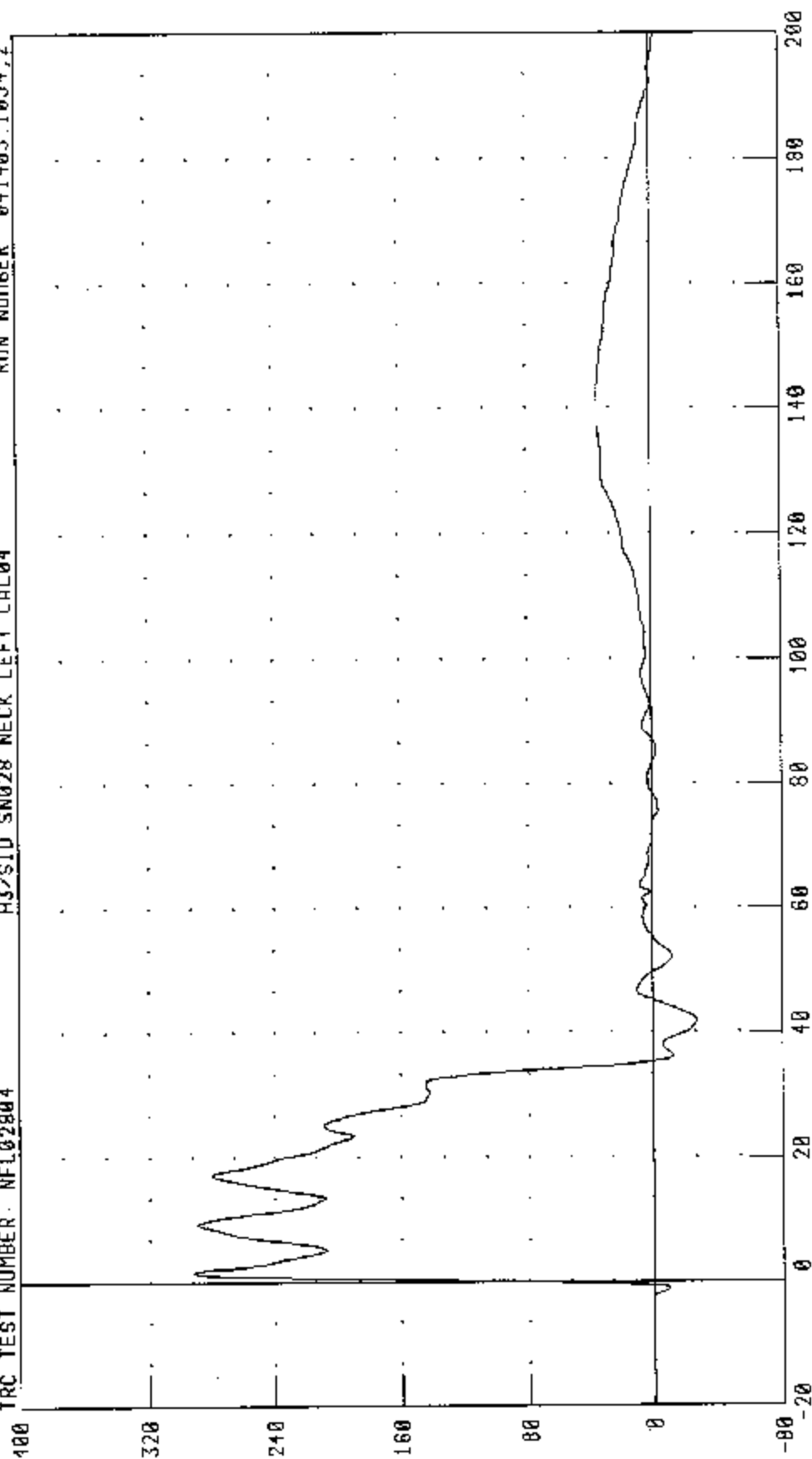
RUN NUMBER: 041403.1054;1

H3/S10 DUMMY CALIBRATION -- LEFT LATERAL NECK TEST
PENDULUM DECELERATION

RUN NUMBER: 041403.1054.2

H3/S10 SN028 NECK LEFT CAL04

TRC TEST NUMBER: NPL02804



C-45
ACCELERATION (G X 10⁻¹)

TIME (MS)

PEAK DATA: 29.23 G @ 1.60 MS; -2.71 G @ 41.84 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

030415

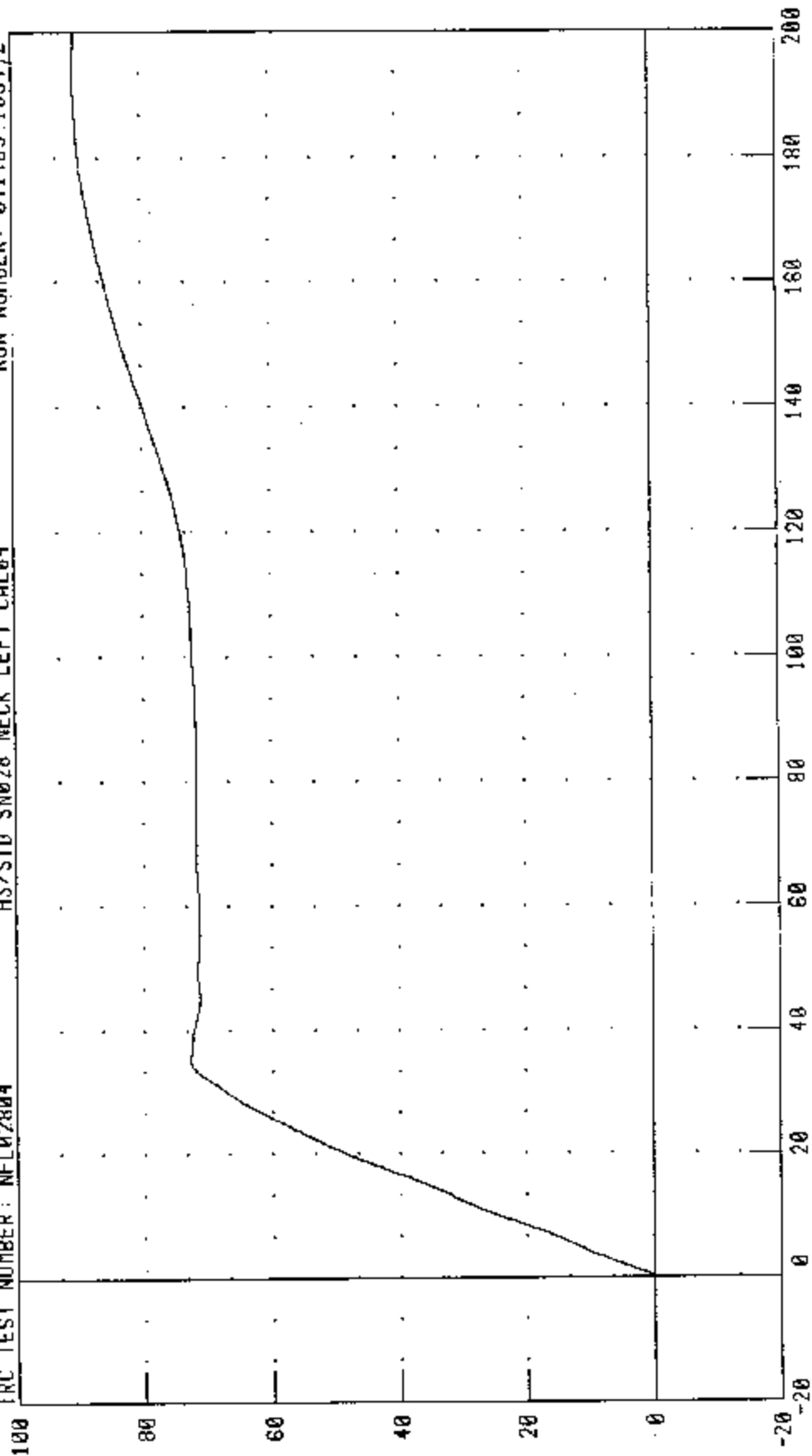
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

INTEGRATED PENDULUM VELOCITY

RUN NUMBER: 041403.1054;2

IRC TEST NUMBER: NFL02804

H3/SID SN028 NECK LEFT CAL04



TIME (MS)

PEAK DATA: 8 05 M/S @ 195.20 MS; -0 01 M/S @ -0.64 MS

CHANNEL: PENXVI FILTER: CH. CLASS 180

VELOCITY (M/S X 10⁻¹)

C-46

030415

H3/S10 DUNNY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT BASE OF NECK

H3/S10 SN028 NECK LEFT CAL04

TAC TEST NUMBER: NFL02804

120

90

60

30

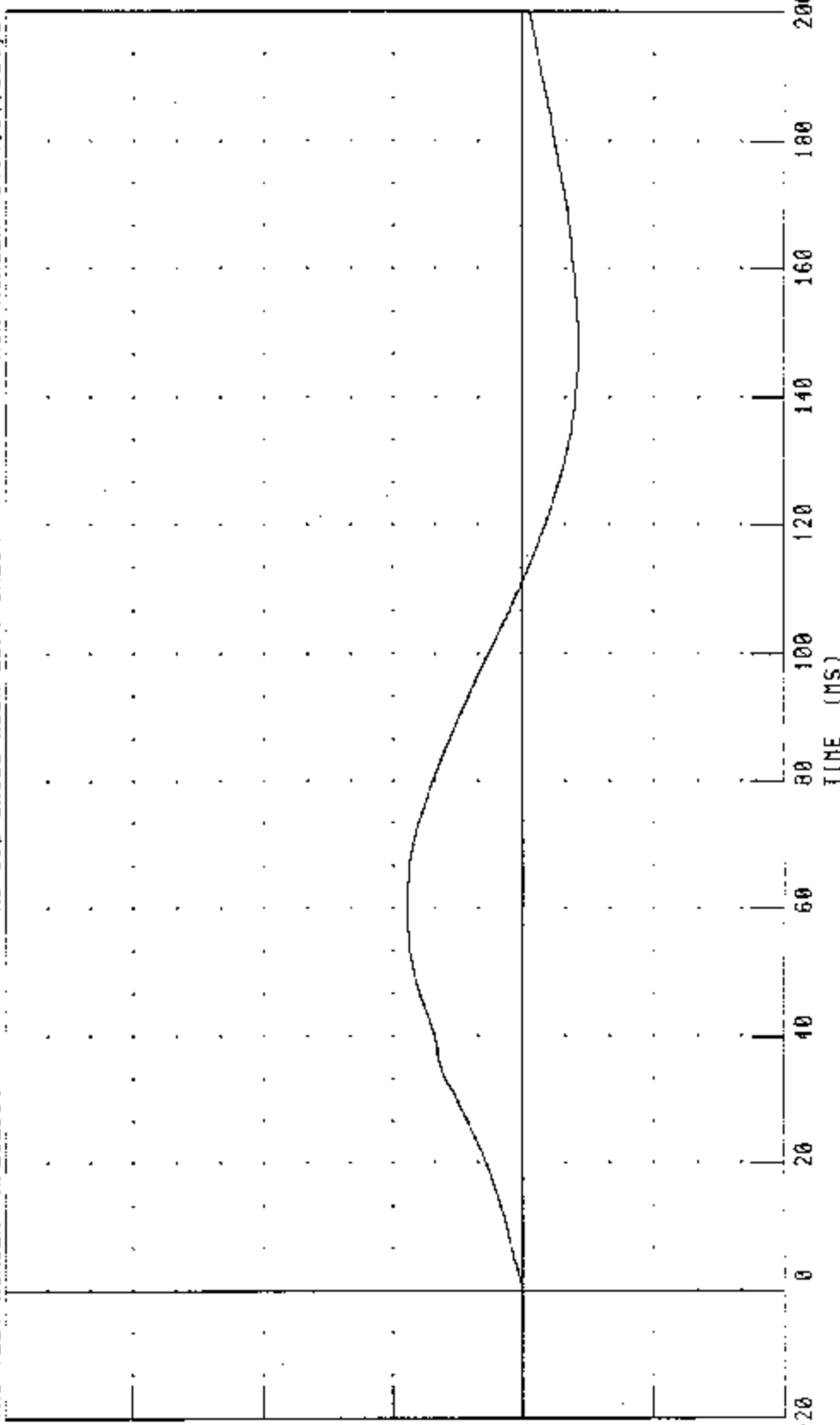
0

-30

-60

-20

C-47
ANGLE (°)



TIME (MS)

PEAK DATA: 25 65 ± 0 60 40 MS, -12.76 ± 0 147.52 MS

CHANNEL: BETA FILTER: CH. CLASS 60

030415

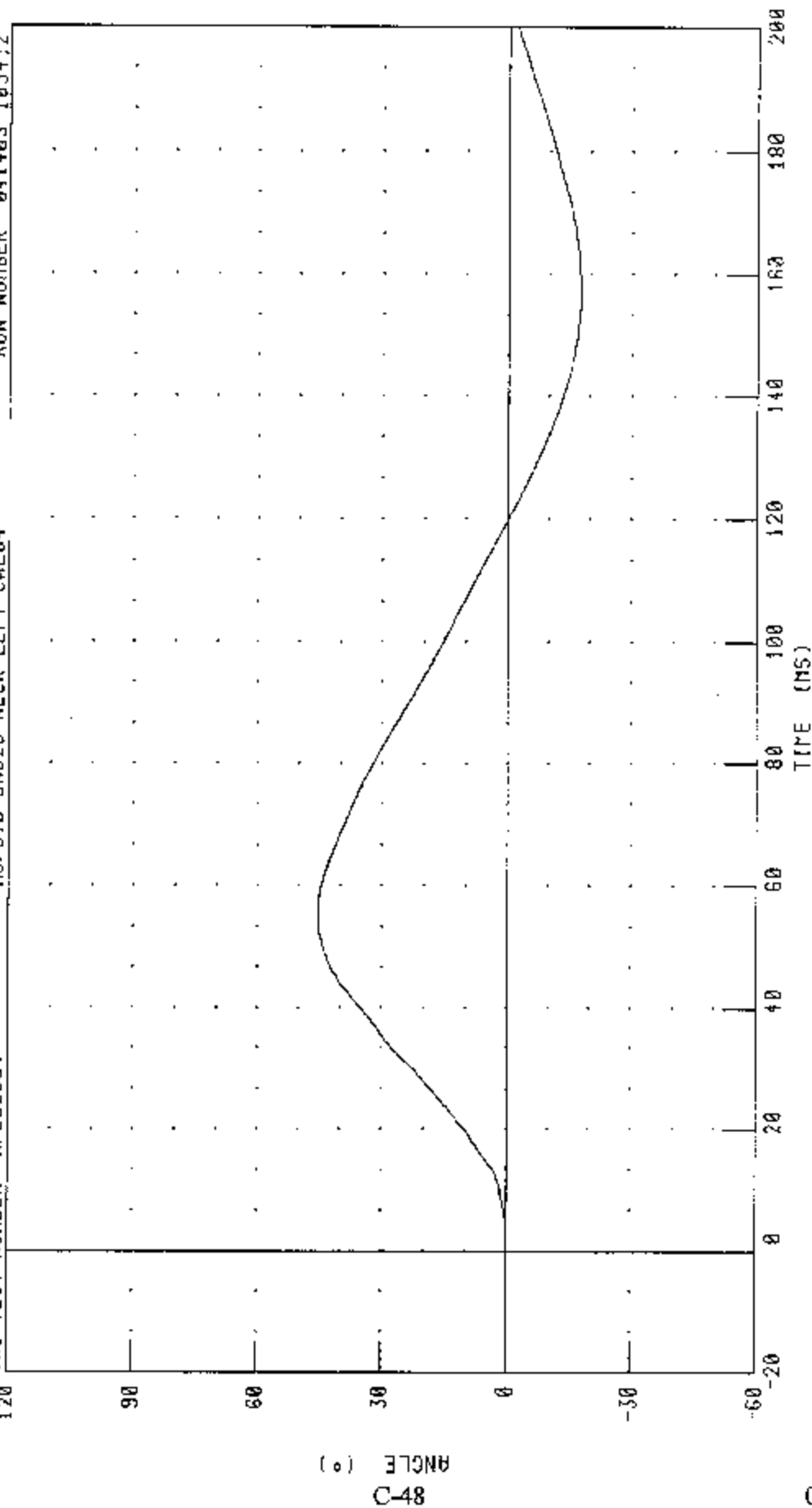
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT OCCIPITAL CONDYLE

Run Number: 041403 1054.2

H3/SID SN028 NECK LEFT CAL04

IRC TEST NUMBER: NFL02804



PEAK DATA: 45.48 ° @ 55.60 MS, -17.53 ° @ 156.80 MS

CHANNEL: THETA FILTER CH CLASS 60

030415

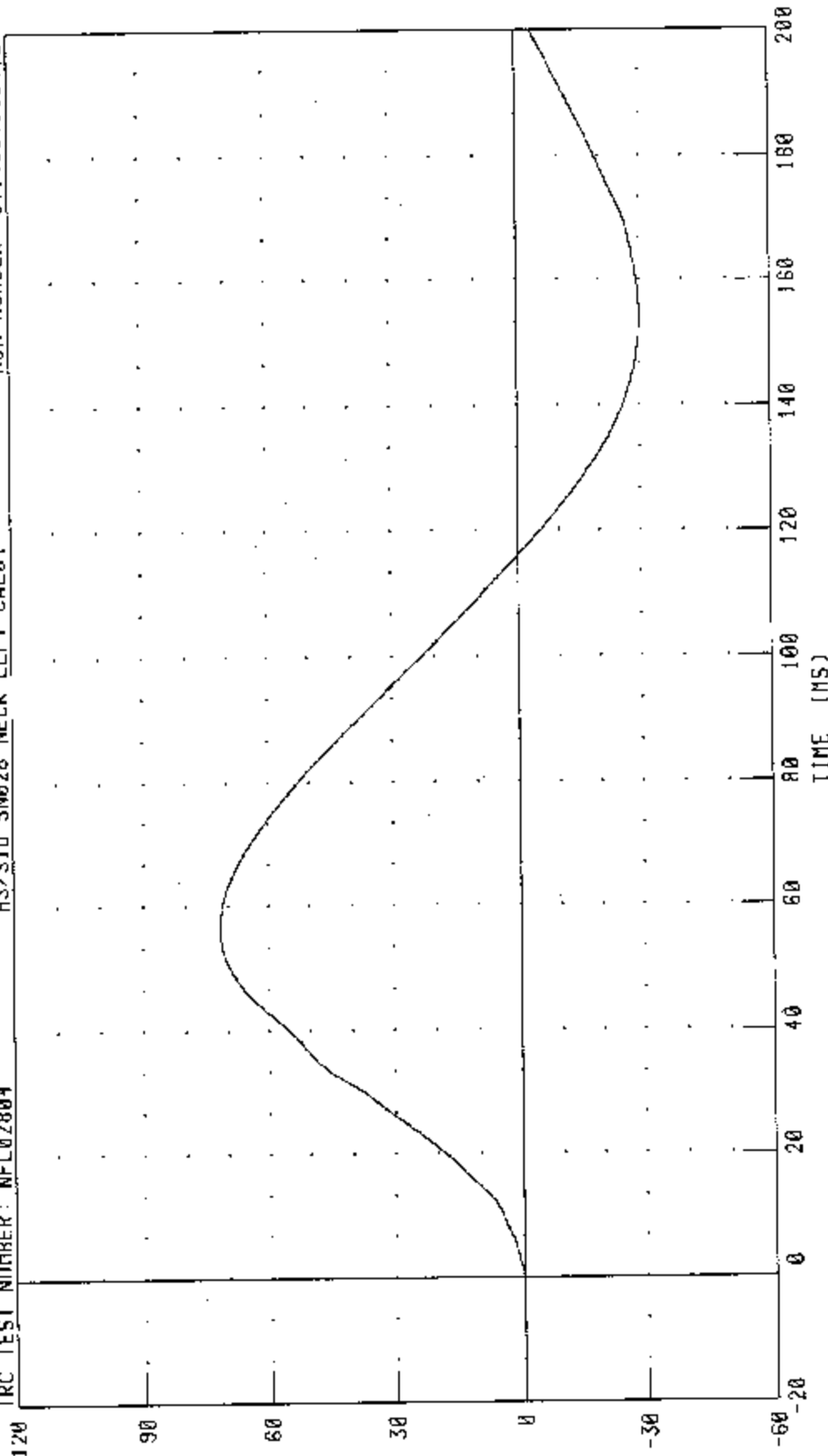
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL ROTATION

RUN NUMBER: 041403.1054.2

TRC TEST NUMBER: NFL02804

H3/SID SM028 NECK LEFT CAL04



C-49

PEAK DATA: 71.91 ° @ 56.64 MS, -30.01 ° @ 154.32 MS

FILTER CH CLASS 60

CHANNEL: TOTAL

030415

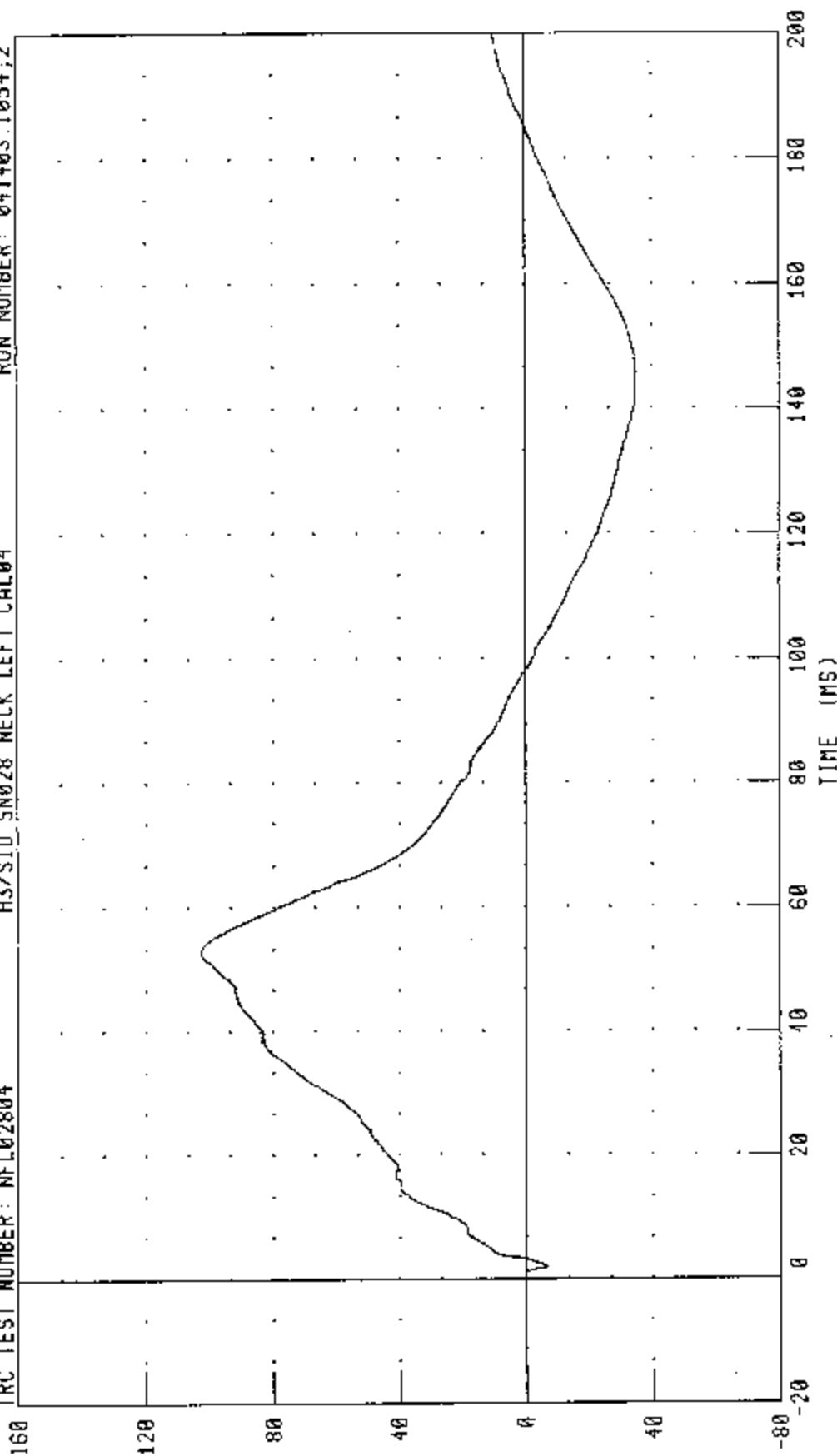
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK FORCE Y AXIS

TRC TEST NUMBER: NFL02804

H3/SID SN028 NECK LEFT CAL04

RUN NUMBER: 041403.1054;2



PEAK DATA: 1027.94 N @ 52.64 MS, -340.36 N @ 145.68 MS

CHANNEL: NEKYF FILTER: CH. CLASS 1000

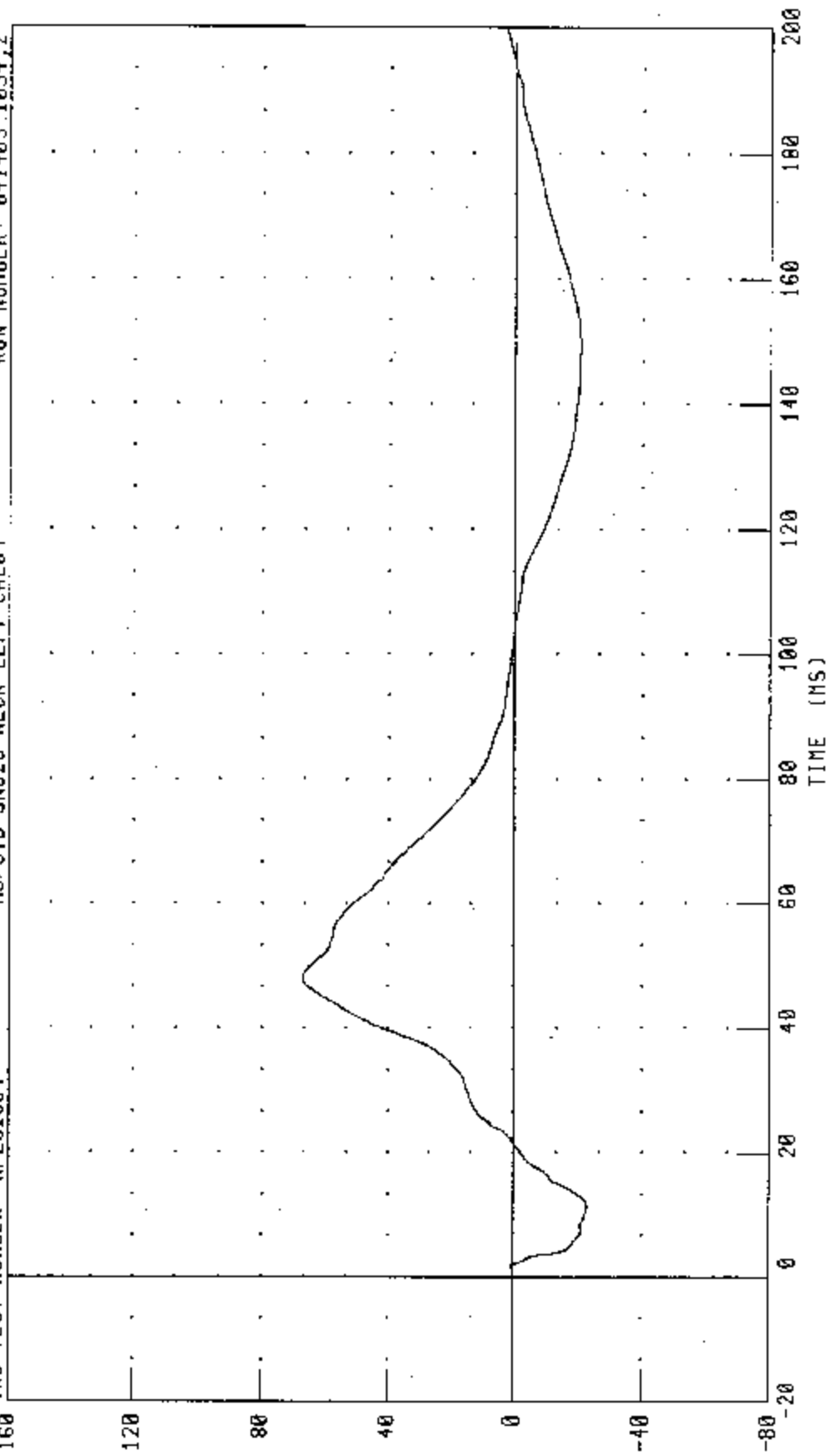
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK MOMENT X AXIS

IRC TEST NUMBER: NFL02804

H3/SID SN028 NECK LEFT CAL04

RUN NUMBER: 041403.1054.2



PEAK DATA: 67.41 N.M @ 48.00 MS, -23.00 N.M @ 11.52 MS

FILTER: CH CLASS 600

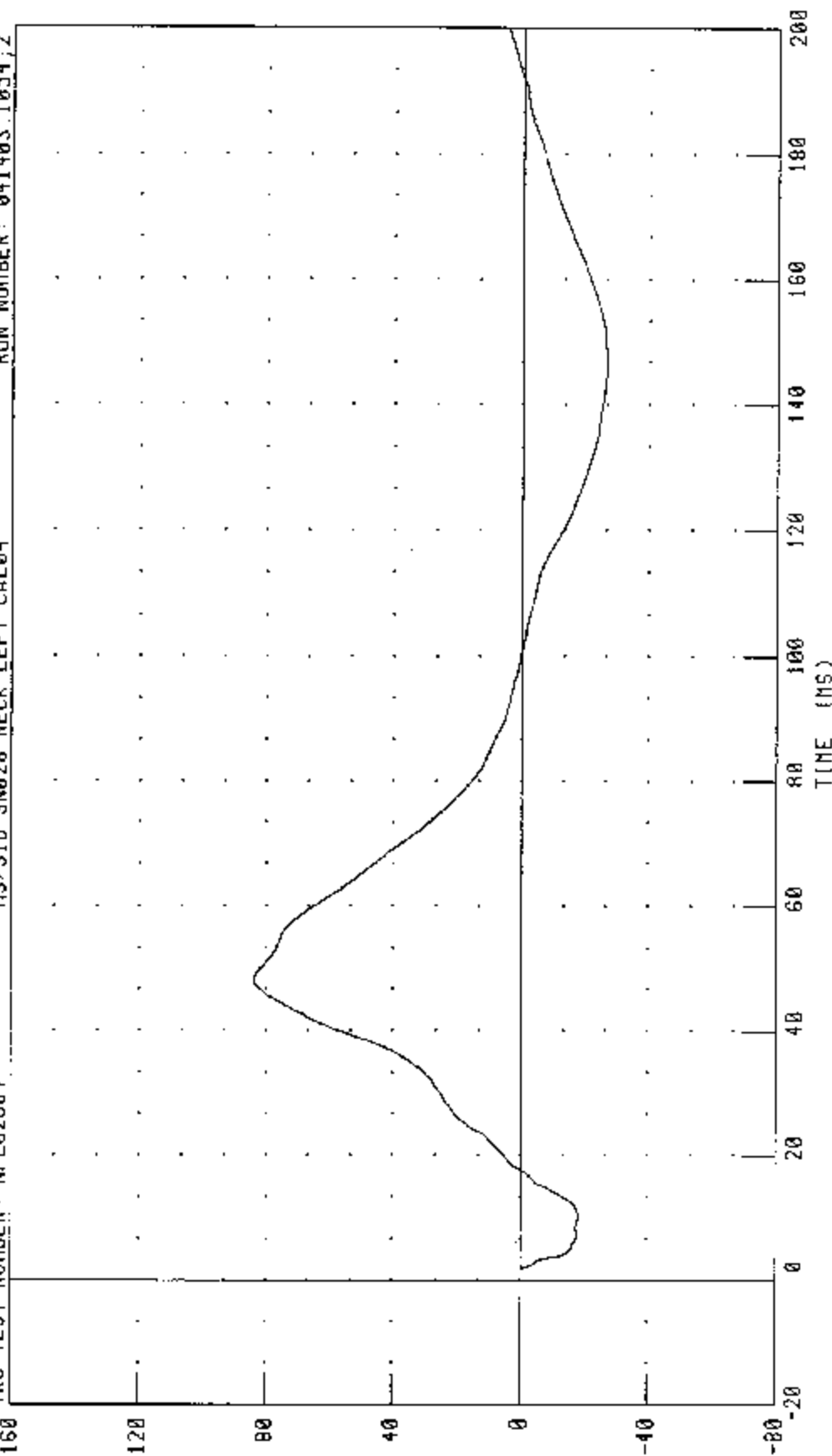
CHANNEL: NEKX1

H3/SID DUNNY CALIBRATION -- LEFT LATERAL NECK TEST
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: NFL02804

H3/SID SN028 NECK LEFT CAL04

RUN NUMBER: 041403.1054,2



CHANNEL: NEKOM FILTER: CH. CLASS 600

PEAK DATA: 83.95 N M @ 48.16 MS; -26.41 N M @ 145.92 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

11-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

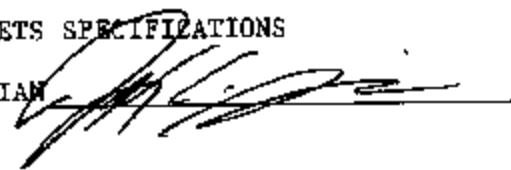
TEST NO: STL02804

572F SID SN028 L.THORAX CAL04

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.30 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	39.6 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	39.1 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	16.4 G

TEST MEETS SPECIFICATIONS

TECHNICIAN

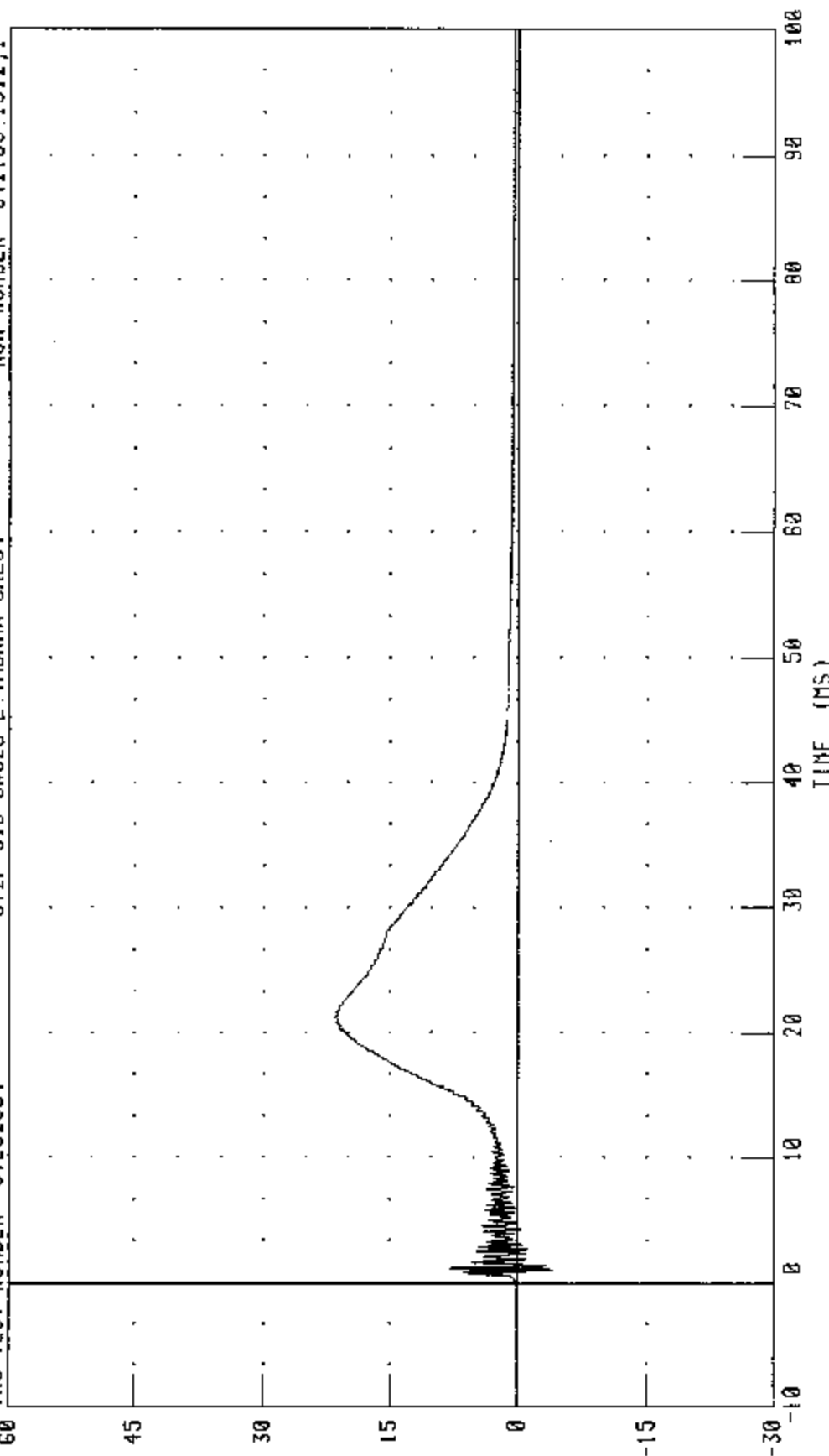


RUN NUMBER: 041103.1311;1

PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

IRC TEST NUMBER: STL02804 572F SID SN028 L THORAX CAL04 RUN NUMBER: 041103.1312.1



PEAK DATA: 21.49 G @ 21.28 MS; -3.99 G @ 0 96 MS

CHANNEL: PENXC FILTER: CH CLASS 1000

ACCELERATION (G)

030415

C-54

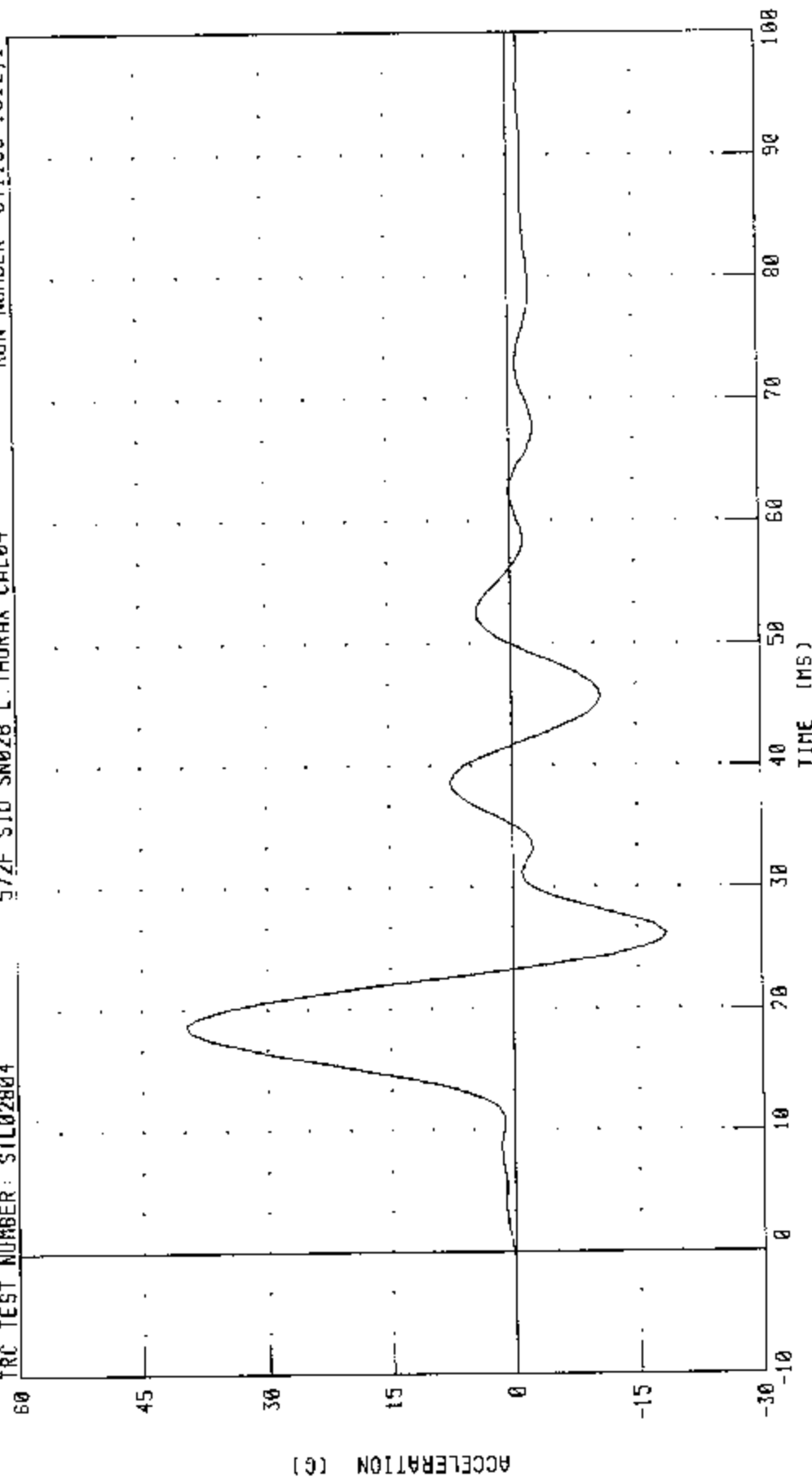
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT UPPER RIB ACCELERATION Y AXIS

RUN NUMBER: 041103 1312,1

TRC TEST NUMBER: STL02804

572F SID SN028 L THORAX CAL04



PEAK DATA 39.58 G @ 18.75 MS, -18.46 G @ 26.25 MS

CHANNEL: LURYG FILTER: FIR 100

ACCELERATION (G)

C-55

030415

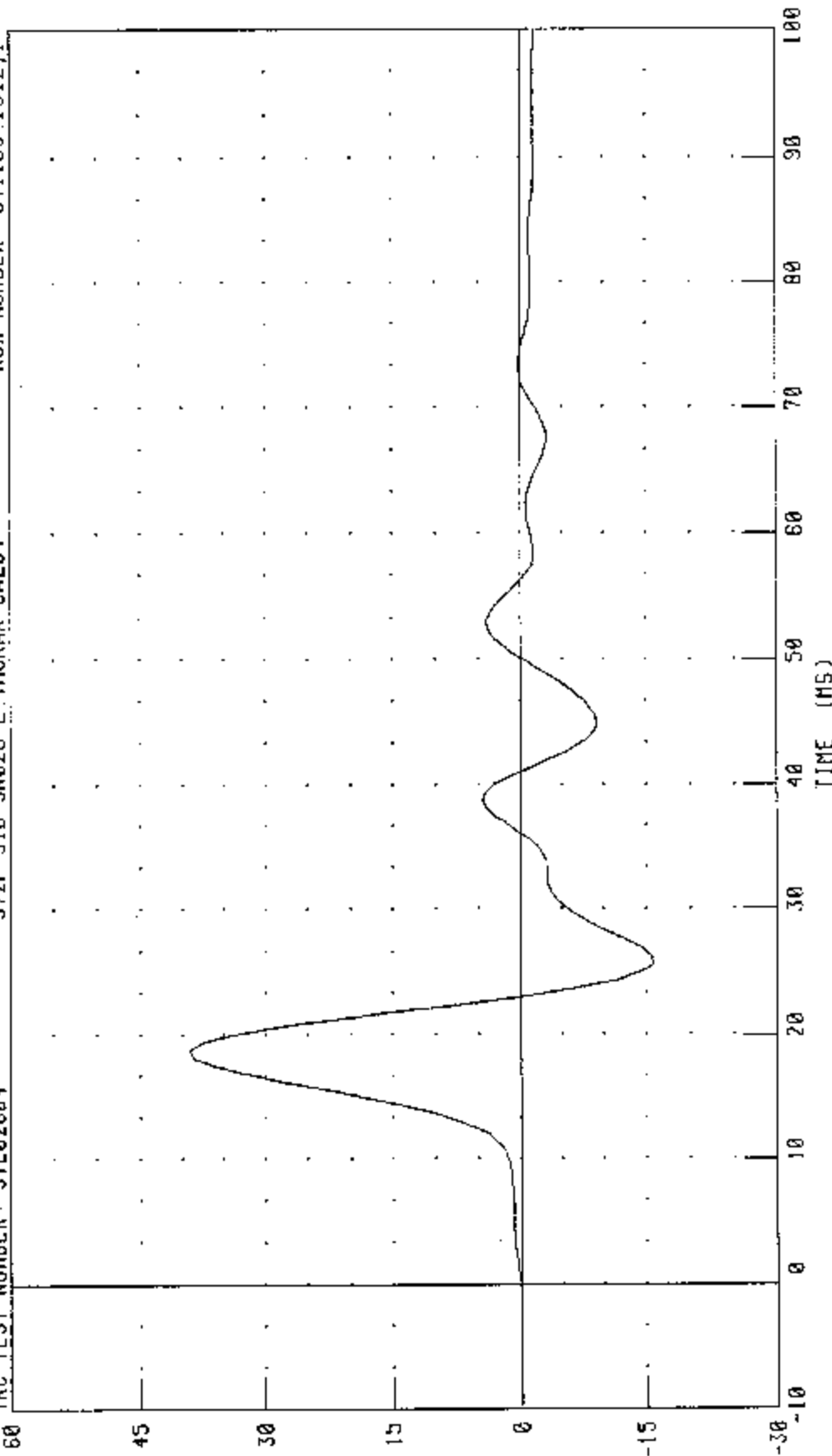
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT LOWER RIB ACCELERATION Y AXIS

TRC TEST NUMBER: STL02804

572F SID SN028 L THORAX CAL04

RUN NUMBER: 041103.1312;1



ACCELERATION (G)

TIME (MS)

CHANNEL: LLRYG FILTER: FIR 100

PEAK DATA: 39.13 G @ 18.75 MS; -15.74 G @ 25.63 MS

PART 572-F S I.D. THORAX CALIBRATION (LEFT SIDE IMPACT)

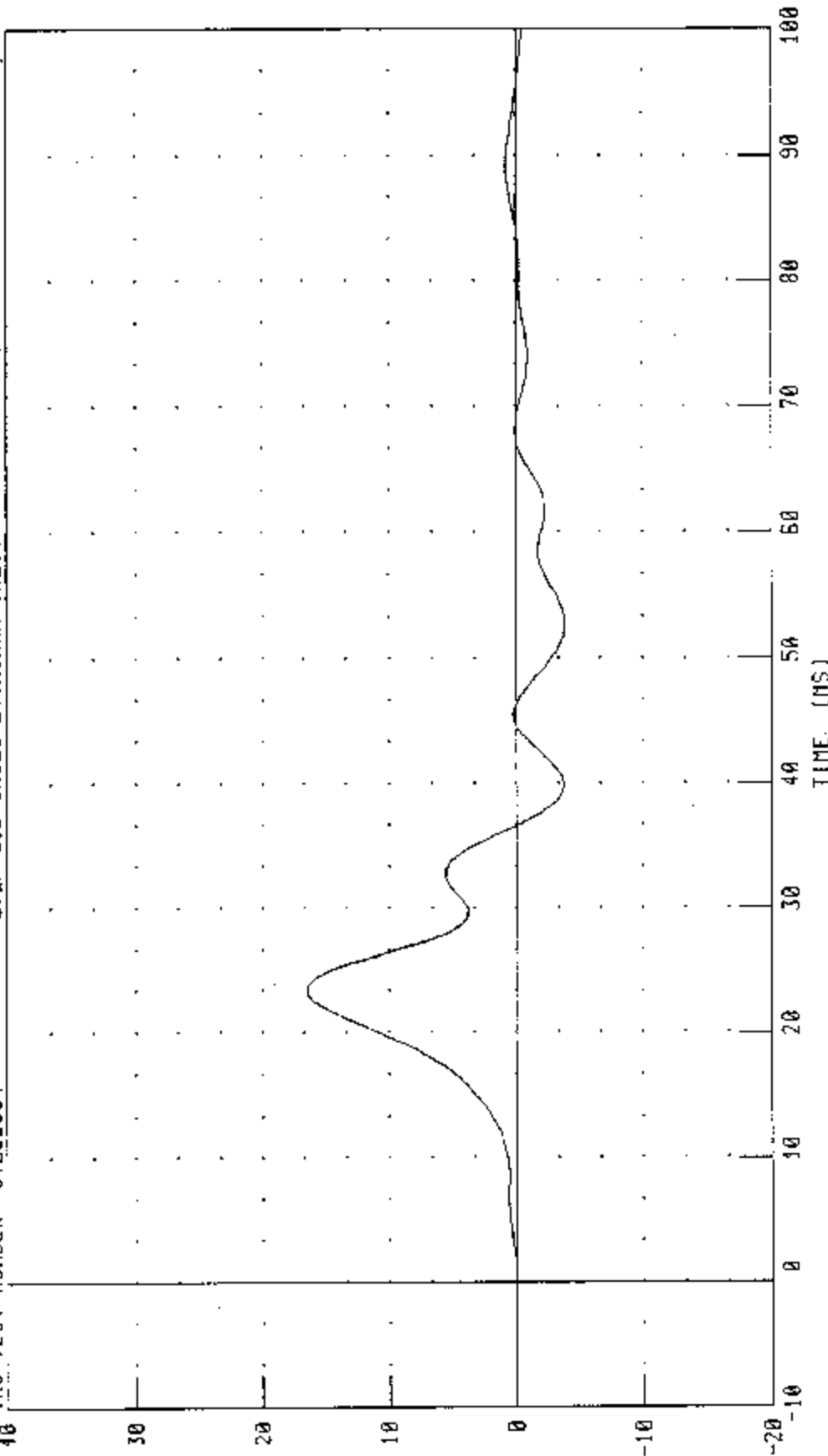
LOWER SPINE ACCELERATION Y AXIS

572F SID SN028 L THORAX CAL04

IRC TEST NUMBER: STL02804

40

RUN NUMBER: 041103.1312.1



ACCELERATION (G)

C-57

PEAK DATA: 16.44 G @ 23.75 MS; -3.87 G @ 53.12 MS

FILTER: FIR 100

CHANNEL: T12YC

030415

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 14-Apr-03

TRC, INC.

TEST NO: 028C04LF1

572B SN 028 TORSO FLEX CAL 04

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 – 25.6° C	21.7 °C
RELATIVE HUMIDITY	10 – 70 %	39 %
FORCE AT 0 DEG. FLEXION	-27 – 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 – 151 N	124.6 N
FORCE AT 30 DEG OF FLEXION	151 – 205 N	182.4 N
FORCE AT 40 DEG OF FLEXION	205 – 258 N	226.9 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12°	8.0°

TEST MEETS SPECIFICATIONS

TECHNICIAN



Transportation Research Center Inc.

572B Abdomen Compression Test

HIII SID Serial No. 028 Calibration No. 04 - 8

Test Date 04/14/2003

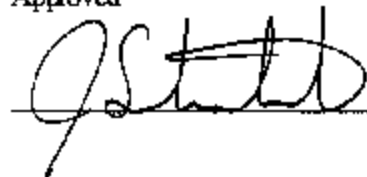
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	6.8 - 8.0 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician



Approved

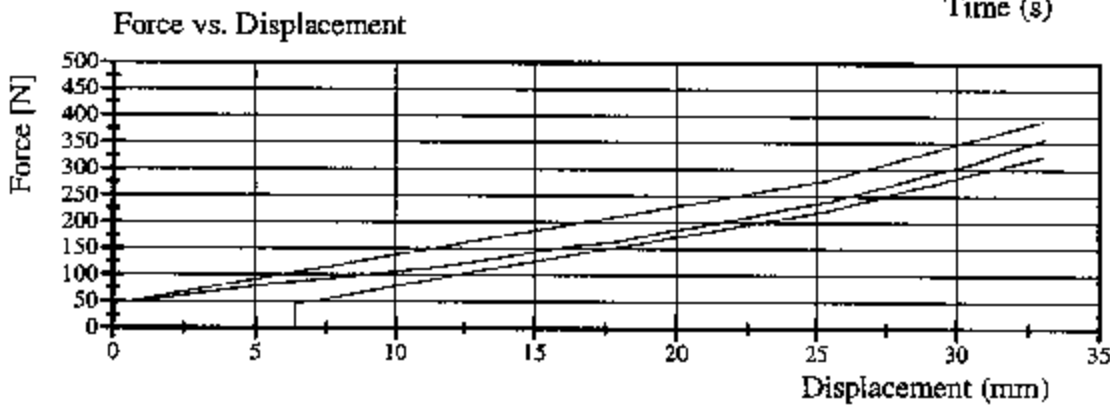
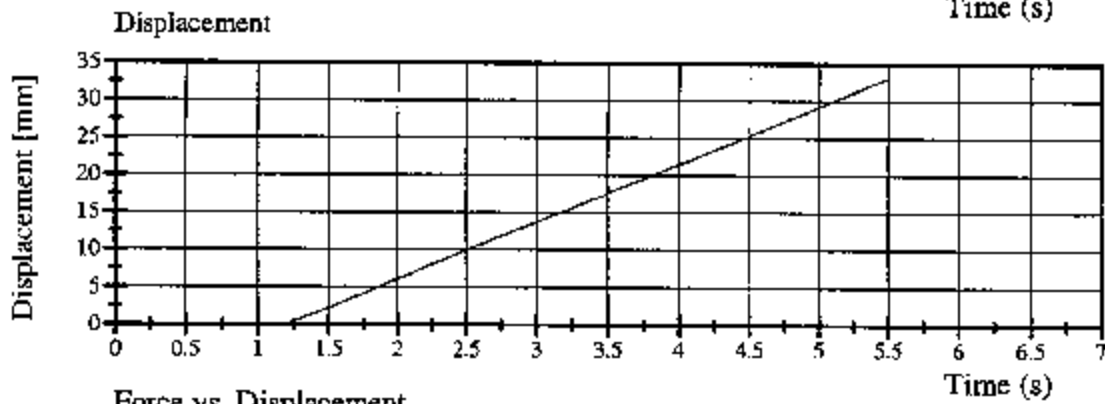
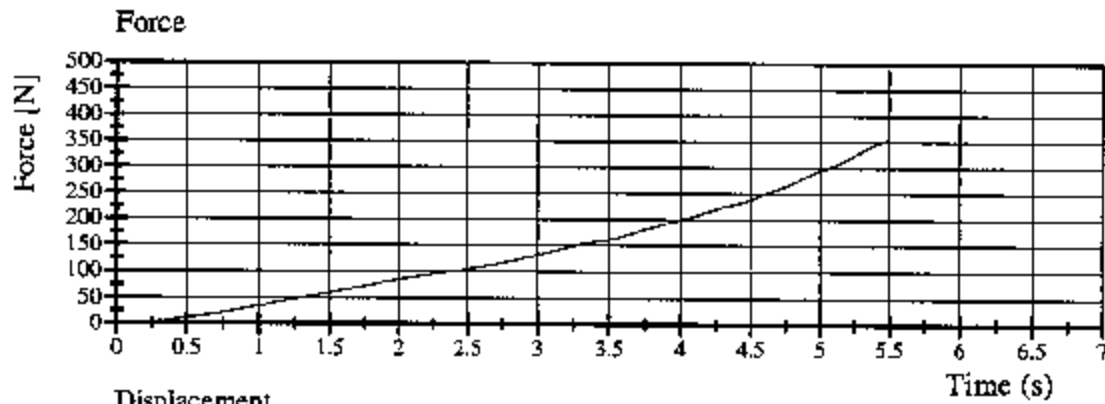


Transportation Research Center Inc.

572B Abdomen Compression Test

IIII SID Serial No. 028 Calibration No. 04 - 8

Test Date 04/14/2003



TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

11-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

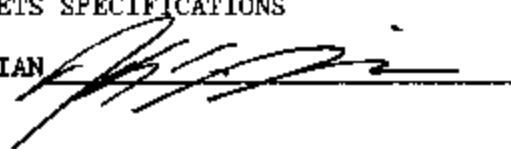
TEST NO: SPL02804

572F SN028 LEFT PELVIS CAL04

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY	10 - 70 %	38.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.26 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	47.0 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	6.3 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN

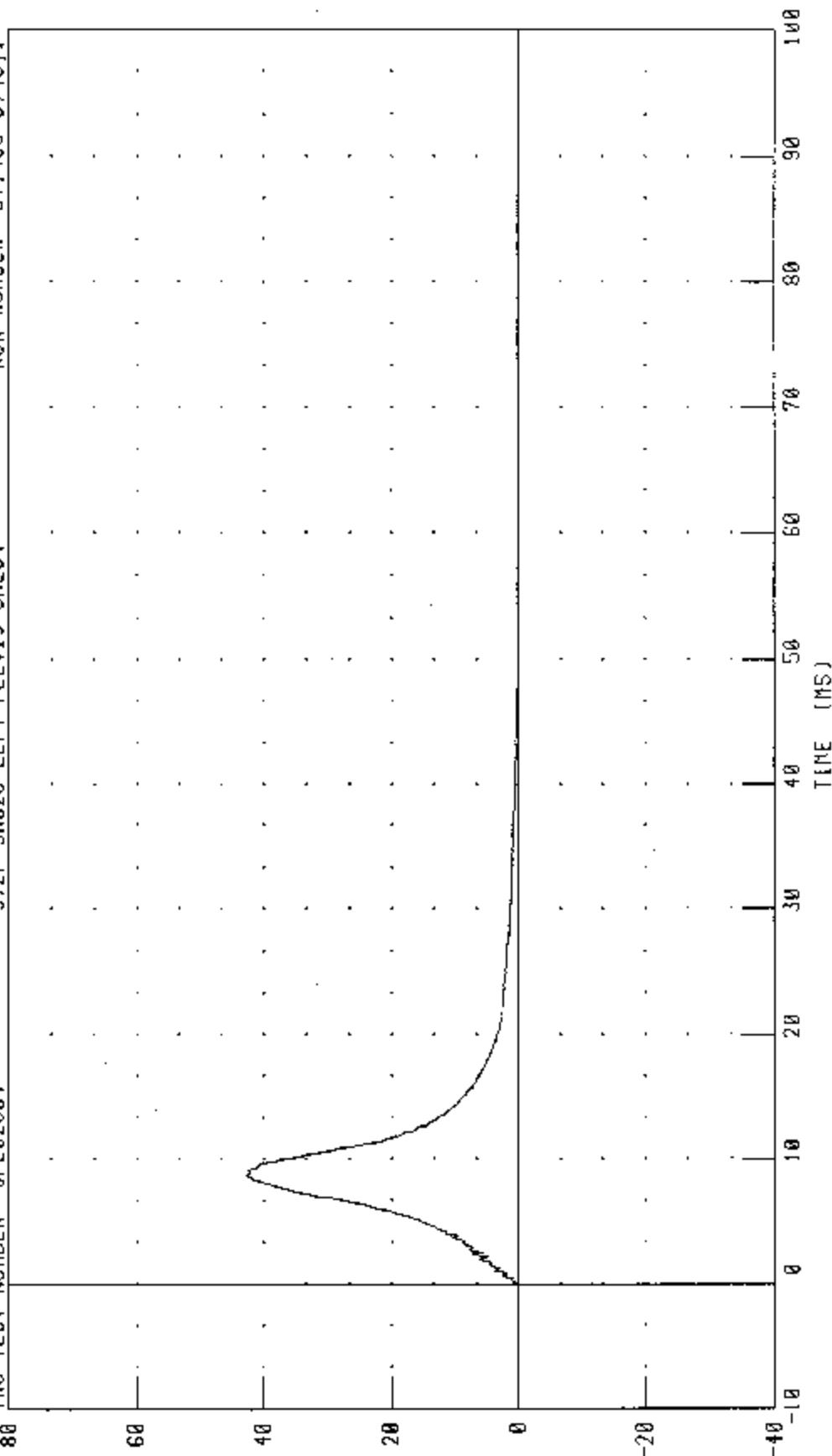


RUN NUMBER: 041103.1318;1

PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

TRC TEST NUMBER: SPL02804 572F SN028 LEFT PELVIS CAL04 RUN NUMBER: 041403 0746.1



PEAK DATA 42.65 G @ 88.80 MS; -0.10 G @ 58.88 MS

CHANNEL: PENXG FILTER: CH. CLASS 1000

ACCELERATION (G)

C-62

030415

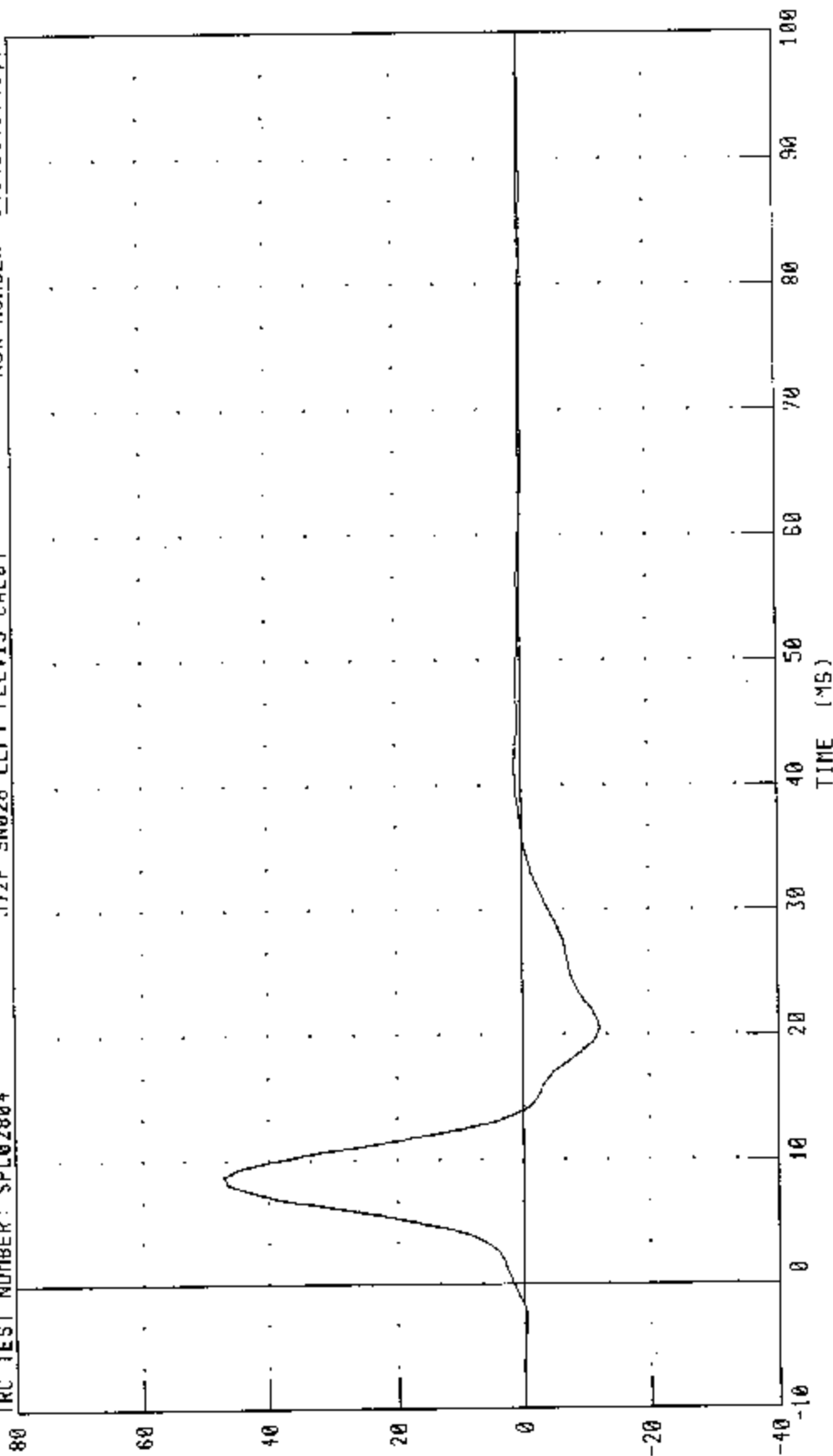
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

TRC TEST NUMBER: SPL02804

572F SN028 LEFT PELVIS CAL04

RUN NUMBER: 041403.0746.1



TIME (MS)

PEAK DATA 47.01 G @ 8.75 MS; -12.17 G @ 20.62 MS

FILTER: FIR 100

CHANNEL: PEVYG

ACCELERATION (G)

C-63

030415

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

03-FEB-03

TRC INC.

572F SNO28 DAMPER TEST CAL01

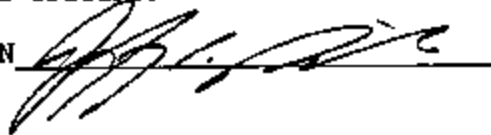
TEST NUMBERS: DP02801A, DP02801B, DP02801C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	46.0 %
VELOCITY	FORCE	667 - 925 N	750 N
2.69 M/S	DISPLACEMENT	29.7 - 34.5 MM	29.9 MM
VELOCITY	FORCE	1733 - 2100 N	1791 N
4.26 M/S	DISPLACEMENT	31.6 - 37.2 MM	34.9 MM
VELOCITY	FORCE	3784 - 4495 N	4259 N
6.12 M/S	DISPLACEMENT	33.3 - 39.6 MM	37.8 MM

DAMPER SETTING = 5.6

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 020303.1116;2

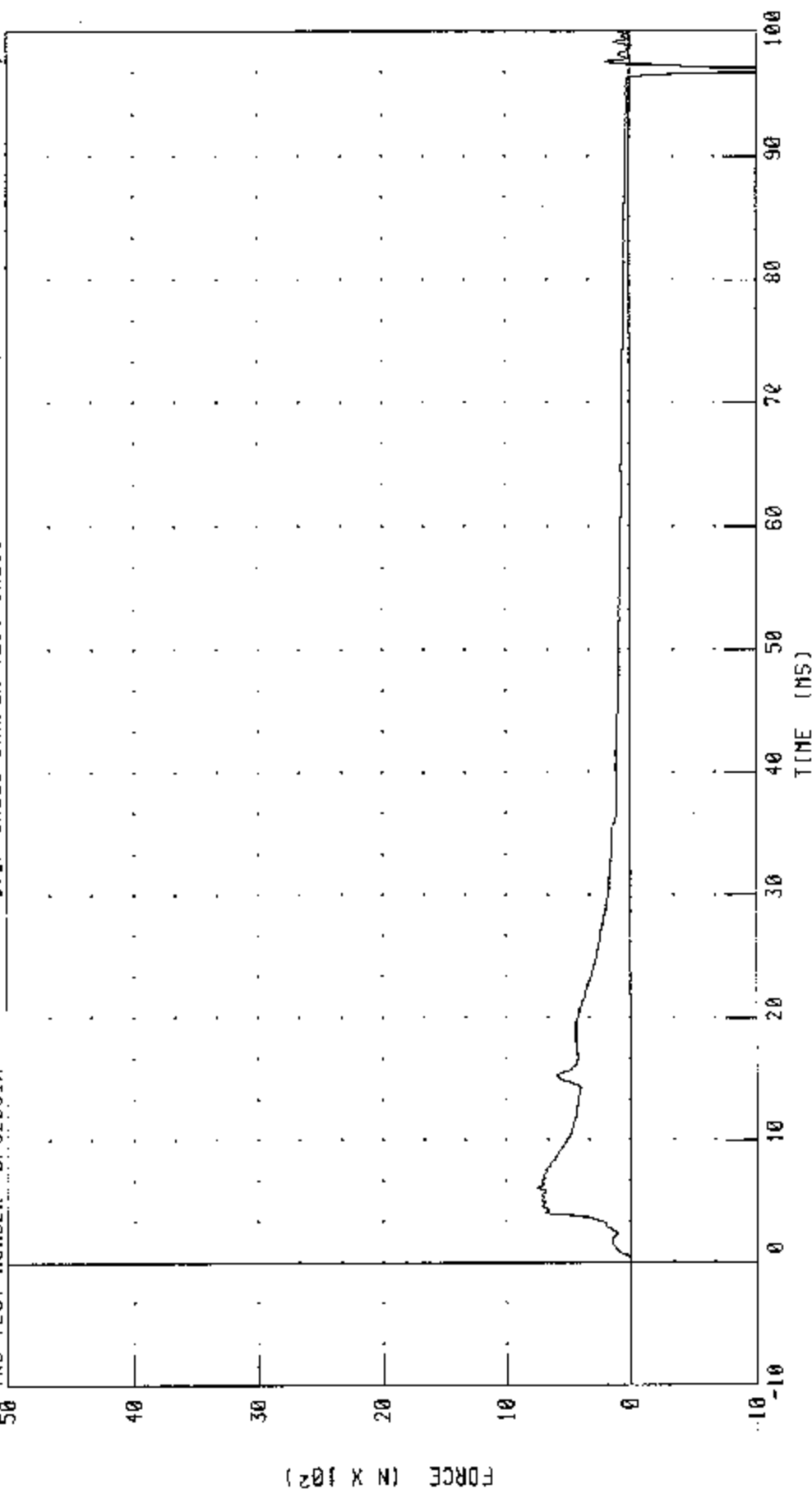
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.8 N/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP02801A

572F SN028 DAMPER TEST CAL01

RUN NUMBER: 020303.1116;2



CHANNEL: DAMPF

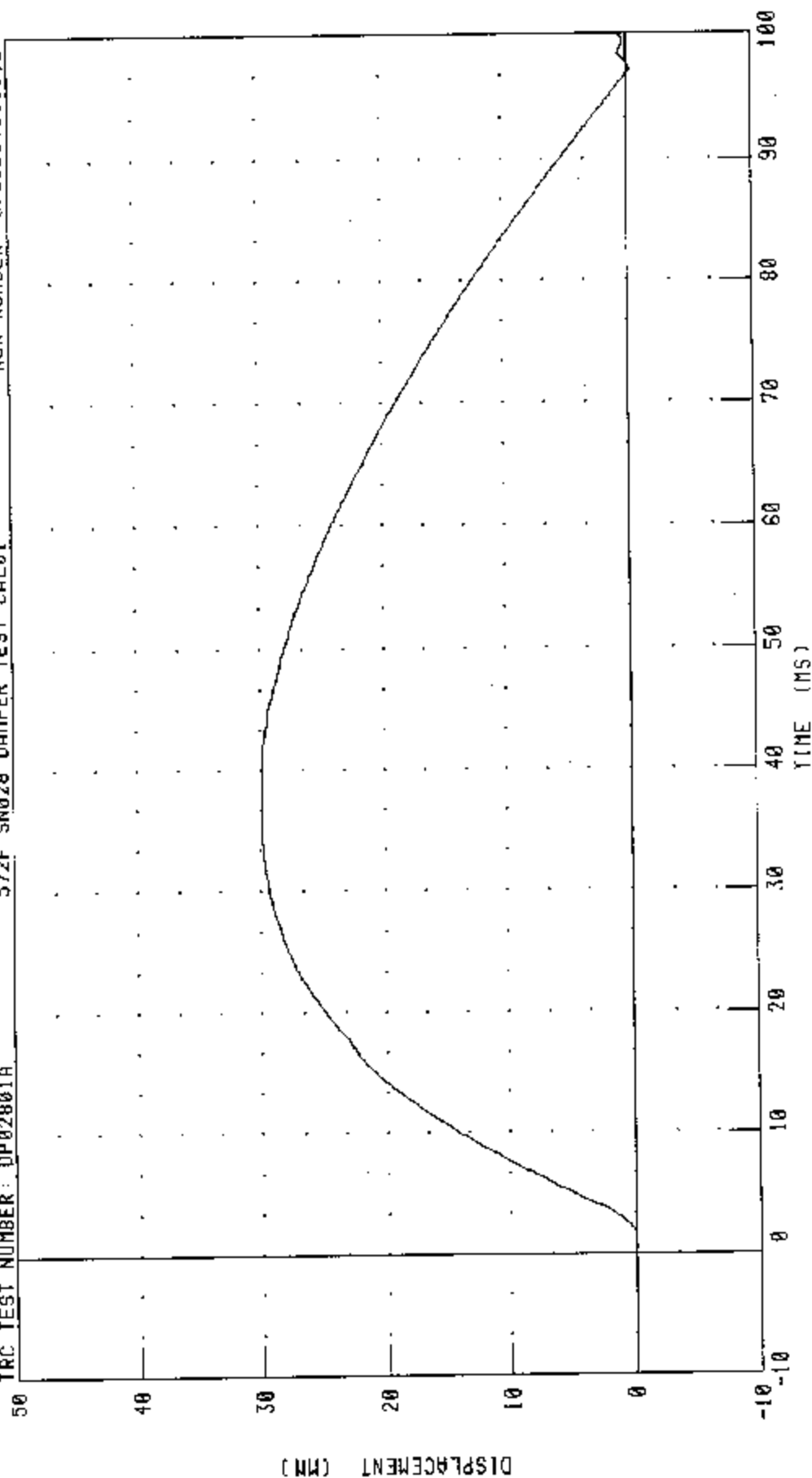
FILTER: CH. CLASS 1000

PEAK DATA: 749.74 N @ 6.16 ms; -1712.81 N @ 96.80 ms

PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP02801A 572F SN028 DAMPER TEST CAL01 RUN NUMBER: 070303.1116.2



CHANNEL: CSTVD

FILTER: CH. CLASS 1000

TIME (MS)

PEAK DATA: 29.87 MM @ 35.20 MS, -0.31 MM @ 97.20 MS

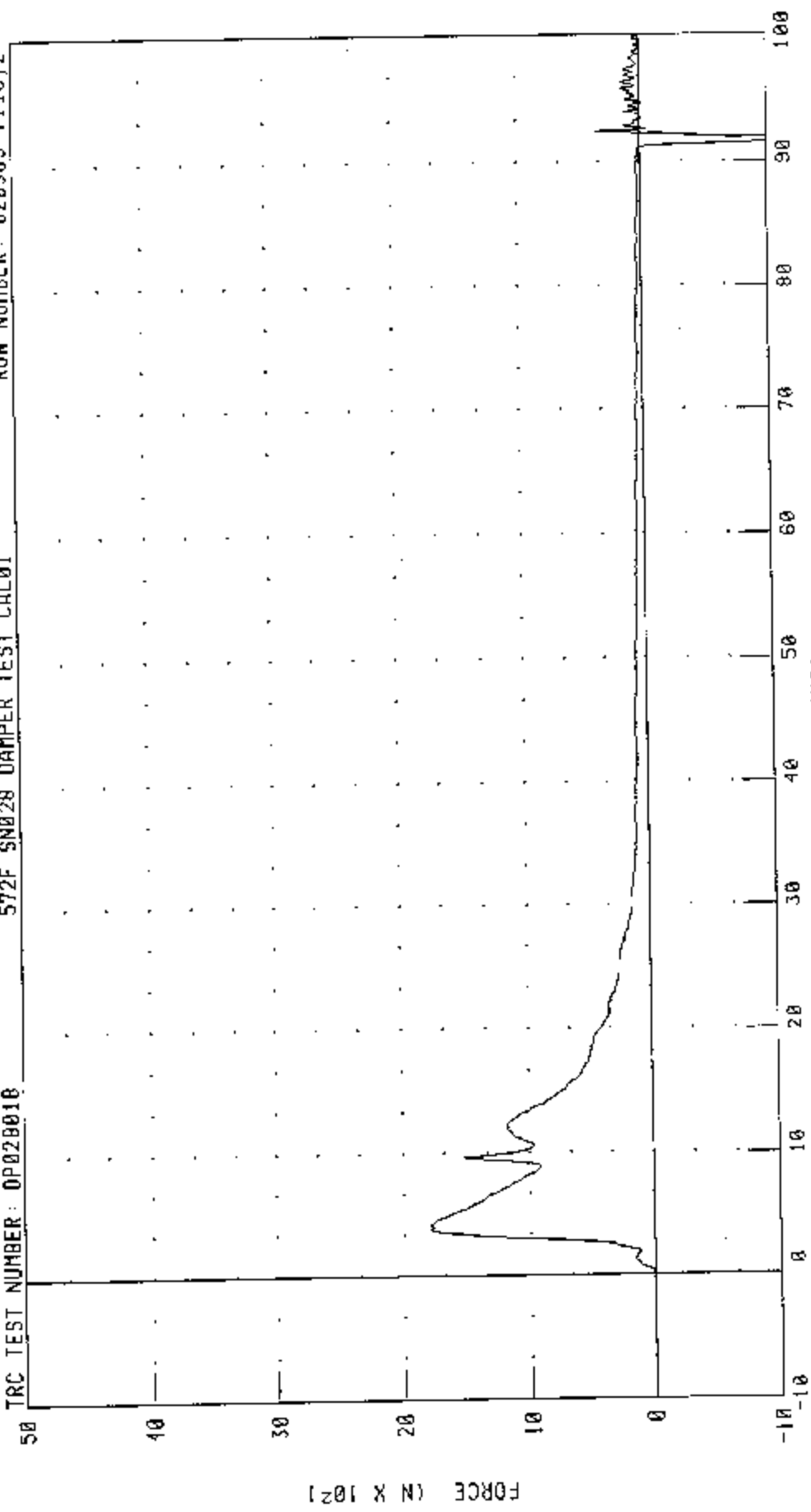
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

RUN NUMBER: 020303 111612

TRC TEST NUMBER: 0P02B010

572F SN028 DAMPER TEST CAL01



TIME (MS)

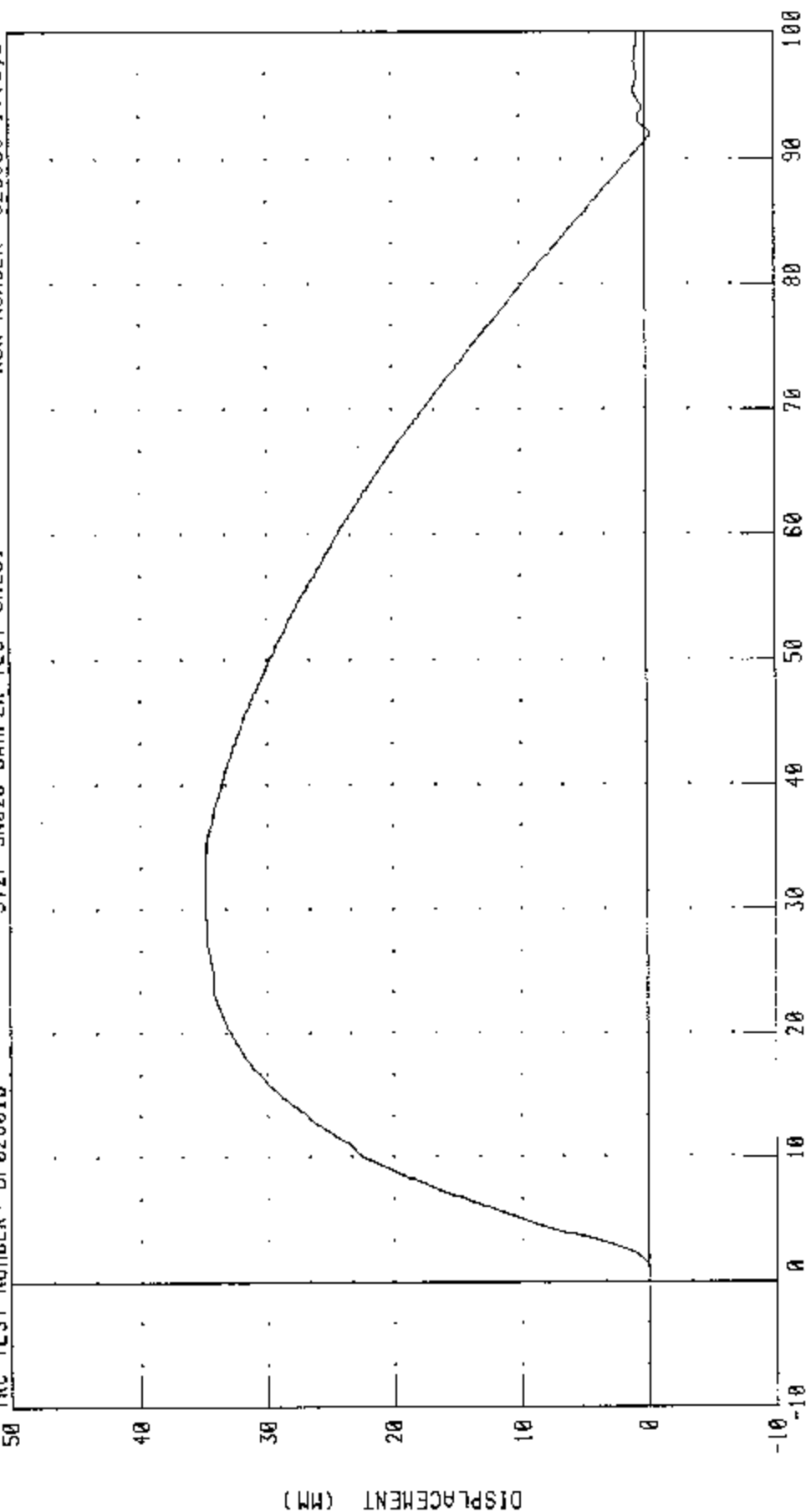
PEAK DATA: 1791.40 N @ 4.16 MS, -2164.23 N @ 91.68 MS

CHANNEL: DAMP FILTER: CH CLASS 1000

PART 572-F S I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 N/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP02801B 572F SN028 DAMPER TEST CAL01 RUN NUMBER: 020303 1116,2



TIME (MS)

PEAK DATA: 34 90 MM @ 30 64 MS; -0.40 MM @ 92.00 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

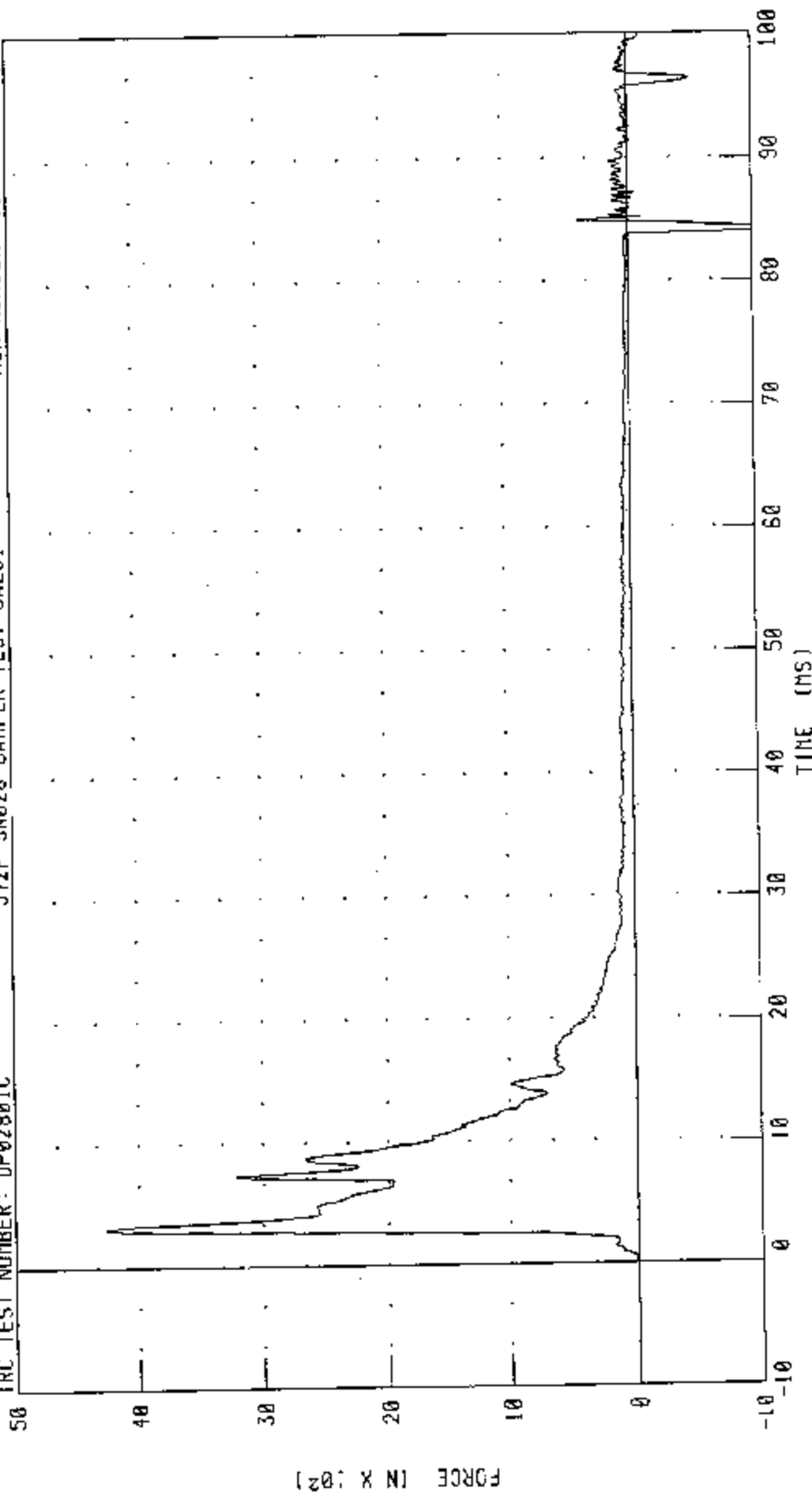
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

572F SN028 CAMPER TEST CAL01

TRC TEST NUMBER: DP02801C

RUN NUMBER: 020303.1117.1



PEAK DATA: 4259 33 N @ 3.12 MS, 2213 12 N @ 84 24 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

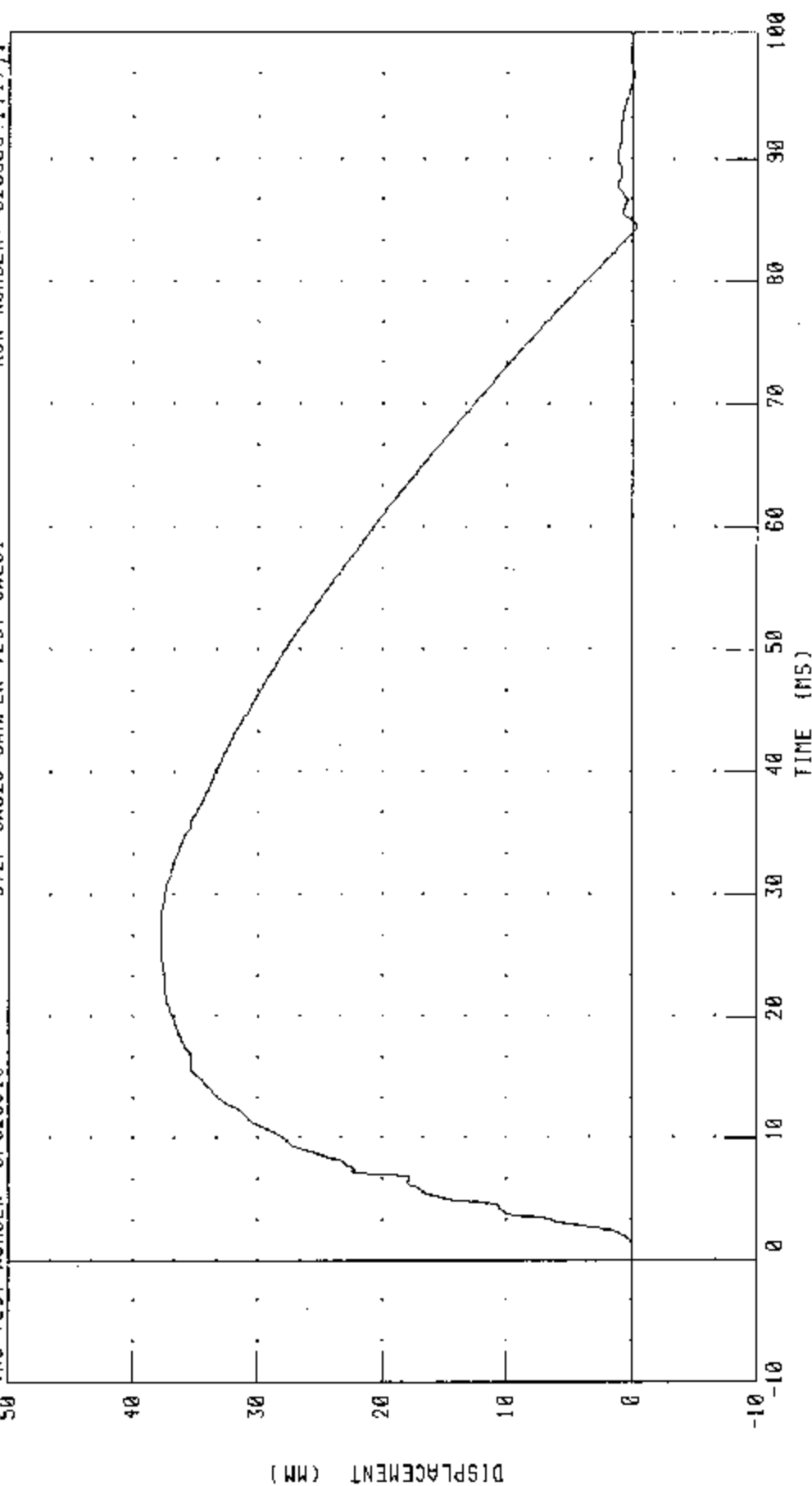
PART 572-F S.I.O. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

TRC TEST NUMBER: DP02801C

572F SN028 DAMPER TEST CAL01

RUN NUMBER: 020303.1117.1



CHANNEL: CSTYD FILTER: CH. CLASS 1000

PEAK DATA: 37.75 MM @ 26.56 MS; -0.36 MM @ 84.48 MS

Calibration Test Results

Post-Test

SID: 065

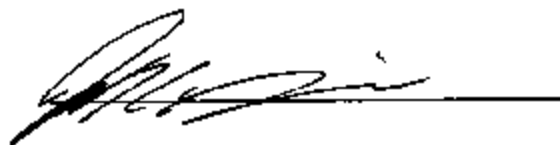
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber passed all test requirements.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.

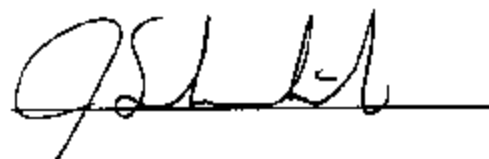
Transportation Research Center Inc.
572F SID Dummy
External Dimensions
Serial No. 065 Calibration No. 08

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	894 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	511 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Rib From Backline	RD	228.6 - 241.3 mm	238 mm	Yes
Knee Pivot From Backline	KH	510.5 - 525.8 mm	514 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	499 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	370 mm	Yes
Top Rib Width From CL	RW-1	165.1 - 180.3 mm	169 mm	Yes
Bottom Rib Width From CL	RW-2	165.1 - 180.3 mm	168 mm	Yes
Difference Between Top & Bottom Rib Width from CL		$\leq$ 2.5 mm	1.0 mm	Yes

Technician



Approved



TRE

TRANSPORTATION RESEARCH CENTER INC.

LATERAL HEAD DROP TEST

SID/HIII DUMMY

17-APR-03

LEFT SIDE CONFIGURATION

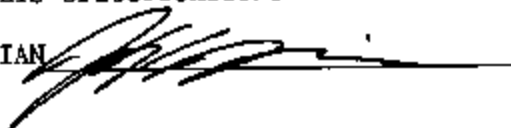
TRC INC.

TEST NO. HDL06508

572M SID/HIII SN065 HEAD CAL08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 deg. C	21.67 deg. C
RELATIVE HUMIDITY	10 - 70 %	29.00 %
PEAK RESULTANT ACCELERATION	120 - 150 G	127.54 G
PEAK LONGITUDINAL ACCELERATION	15 G MAX	-5.18 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 042803.0629;1

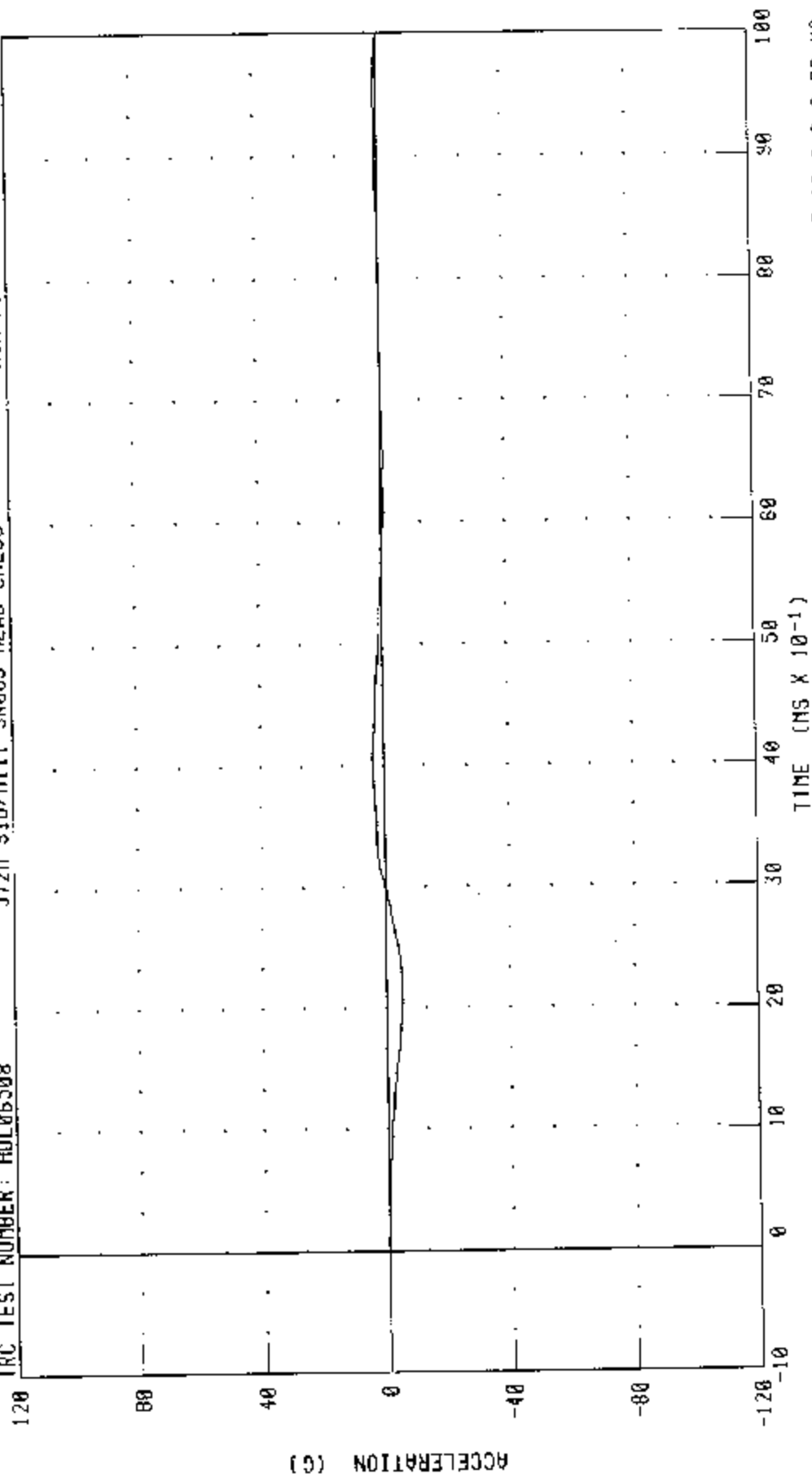
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION X AXIS

RUN NUMBER: 042803.0617.2

TRC TEST NUMBER: HDL06508

572M SID/HIII SN065 HEAD CAL08



PEAK DATA: 3.42 G @ 4.08 MS, 5.18 G @ 2.08 MS

CHANNEL: HEDXC FILTER: CH. CLASS 1000

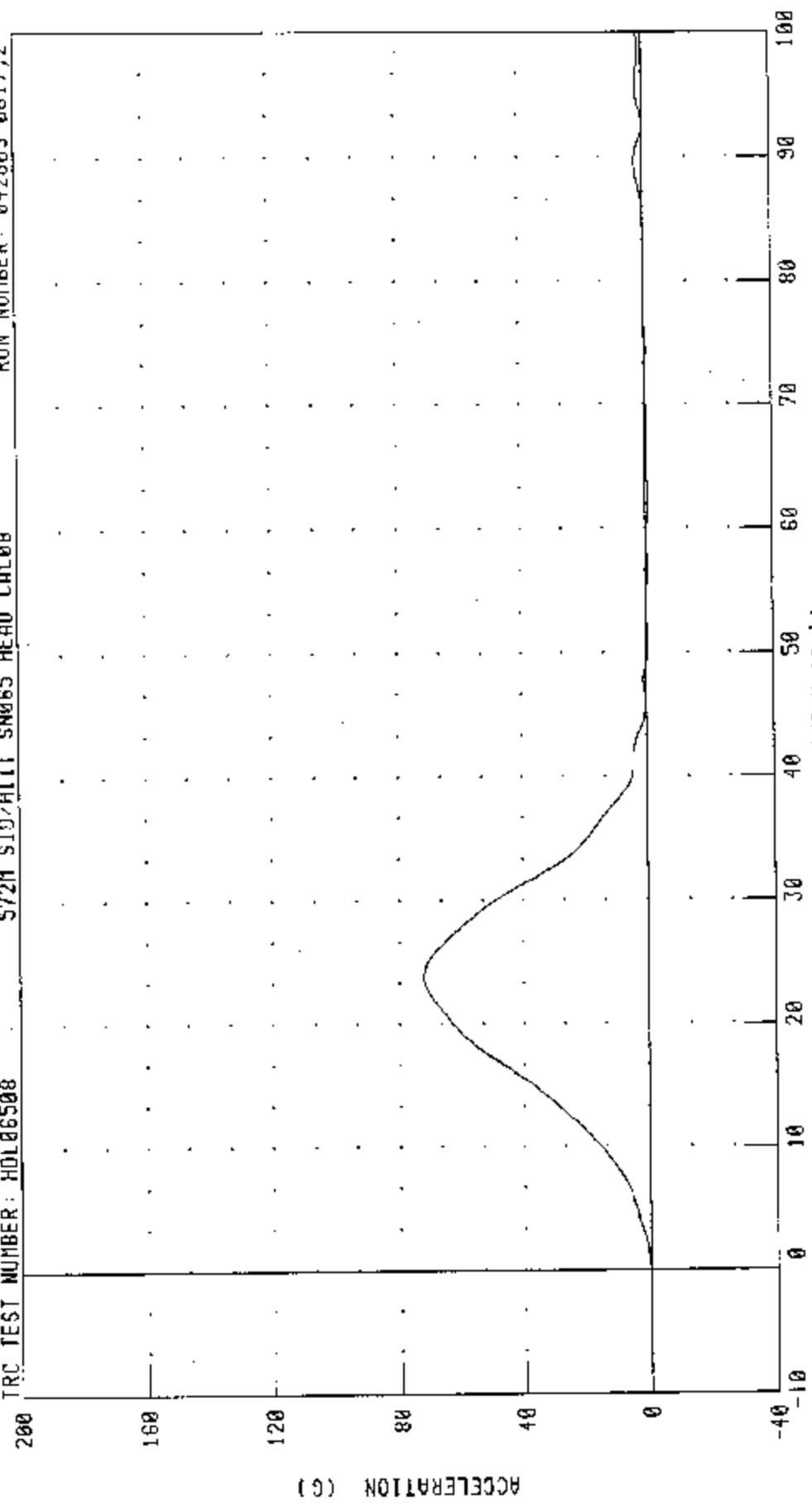
572M SIG/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION Y AXIS

RUN NUMBER: 042803 0617;2

TRC TEST NUMBER: HDL06508

572M SIG/HIII SN065 HEAD CAL00



TIME (MS X 10⁻¹)

PEAK DATA: 72.46 G @ 2.40 MS, -1.15 G @ 6.24 MS

CHANNEL: HEDYC FILTER: CH. CLASS 1000

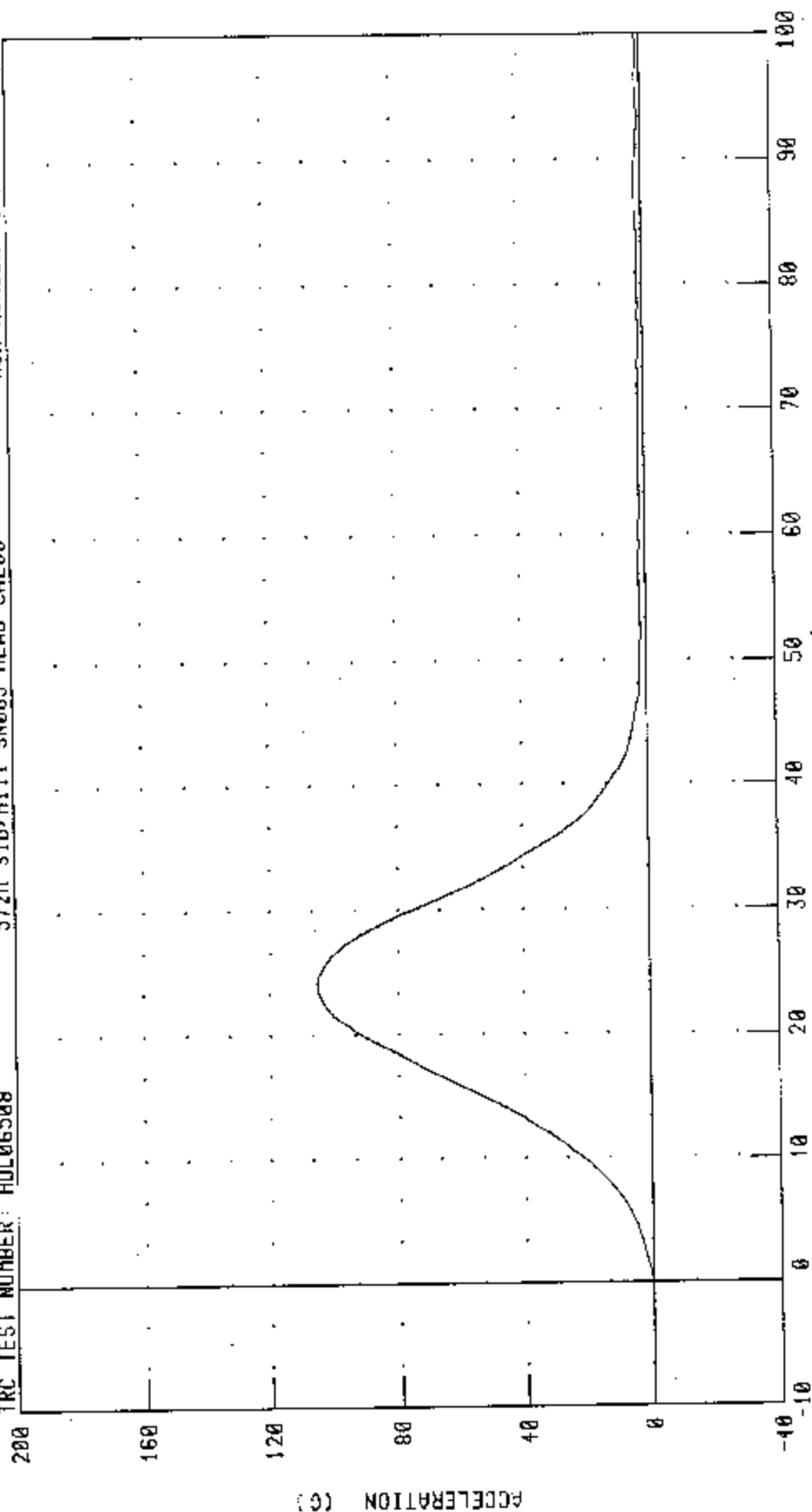
572M SID/HIII GUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION Z AXIS

RUN NUMBER: 042803.0617;2

TRC TEST NUMBER: HDL06508

572M SID/HIII SN065 HEAD CAL00



PEAK DATA: 104.86 G @ 2.40 MS; -0.05 G @ -0.16 MS

CHANNEL: HDZG FILTER: CH. CLASS 1000

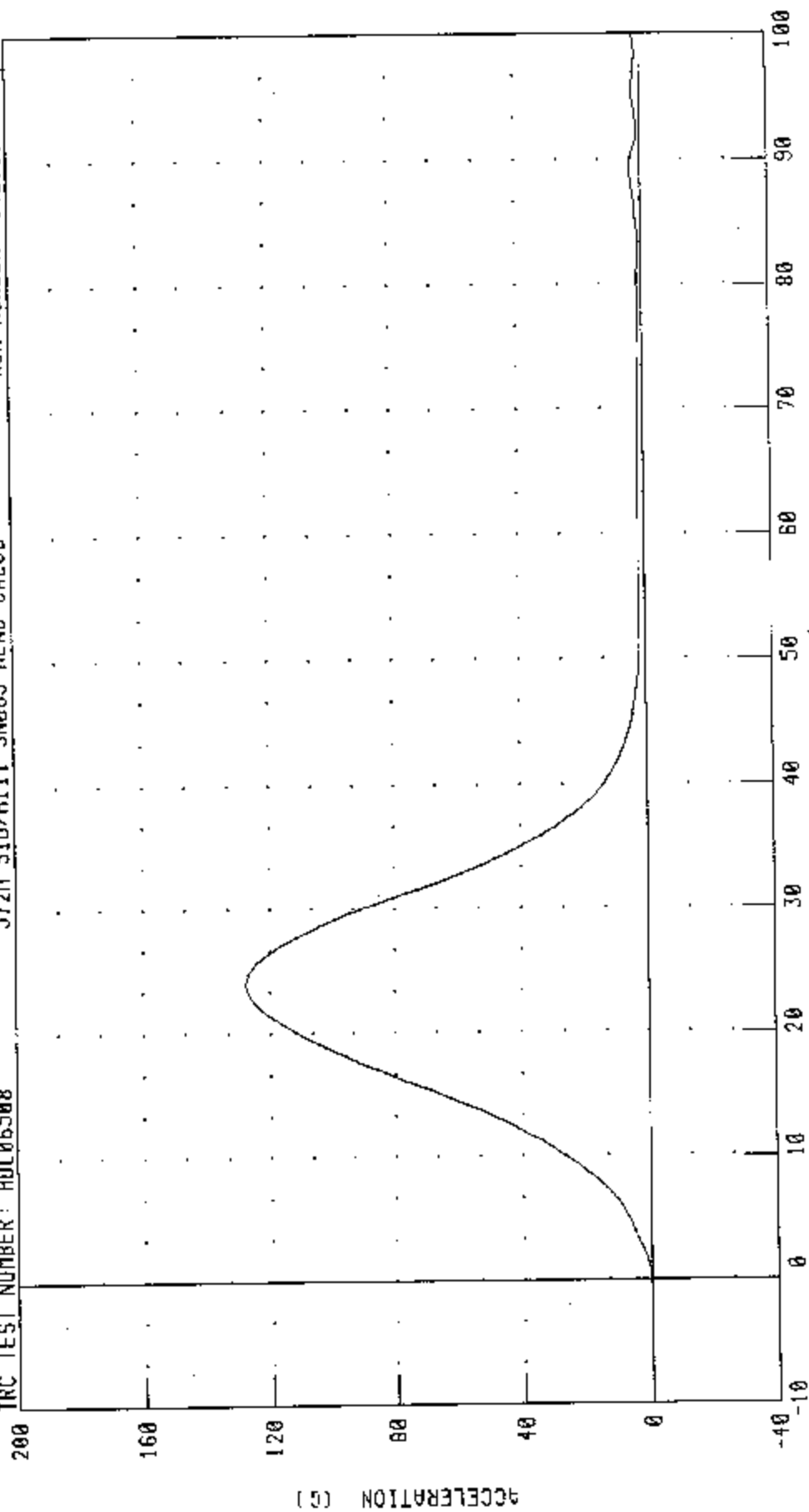
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD RESULTANT ACCELERATION

RUN NUMBER: 042803 0617.2

TRC TEST NUMBER: HDL06508

572M SID/HIII SN065 HEAD CAL08



CHANNEL: HEDRC

FILTER: CH. CLASS 1000

TIME (MS X 10⁻¹)

PEAK DATA: 127.54 G @ 2.40 MS; 0.01 G @ -0.56 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL NECK TEST

HYBRIDIII SID DUMMY

17-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

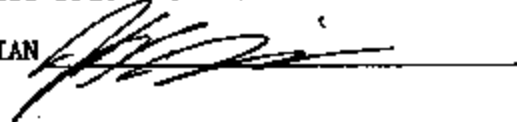
TEST NO. NFL06508

H3/SID SN065 NECK LEFT CAL08

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 deg. C	21.11 deg. C
RELATIVE HUMIDITY		10 - 70 %	40.00 %
IMPACT VELOCITY		6.89 - 7.13 M/S	7.06 M/S
INTEGRATED VELOCITY	10 MS	1.96 - 2.55 M/S	2.53 M/S
	20 MS	4.12 - 5.10 M/S	4.95 M/S
	30 MS	5.73 - 7.01 M/S	6.91 M/S
	40 - 70 MS	6.27 - 7.64 M/S	7.14- 7.23 M/S
MAXIMUM MIDSAGGITAL PLANE ROTATION		66 - 82 deg.	70.33 deg.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		58 - 67 MS	59.84 MS
MAXIMUM MOMENT ABOUT OCCIPITAL CONDYLE		73 - 88 NM	82.84 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		49 - 64 MS	52.48 MS
TIME OF MAXIMUM ROTATION AFTER MAXIMUM MOMENT		2 - 16 MS	8.64 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 041703.1452;1

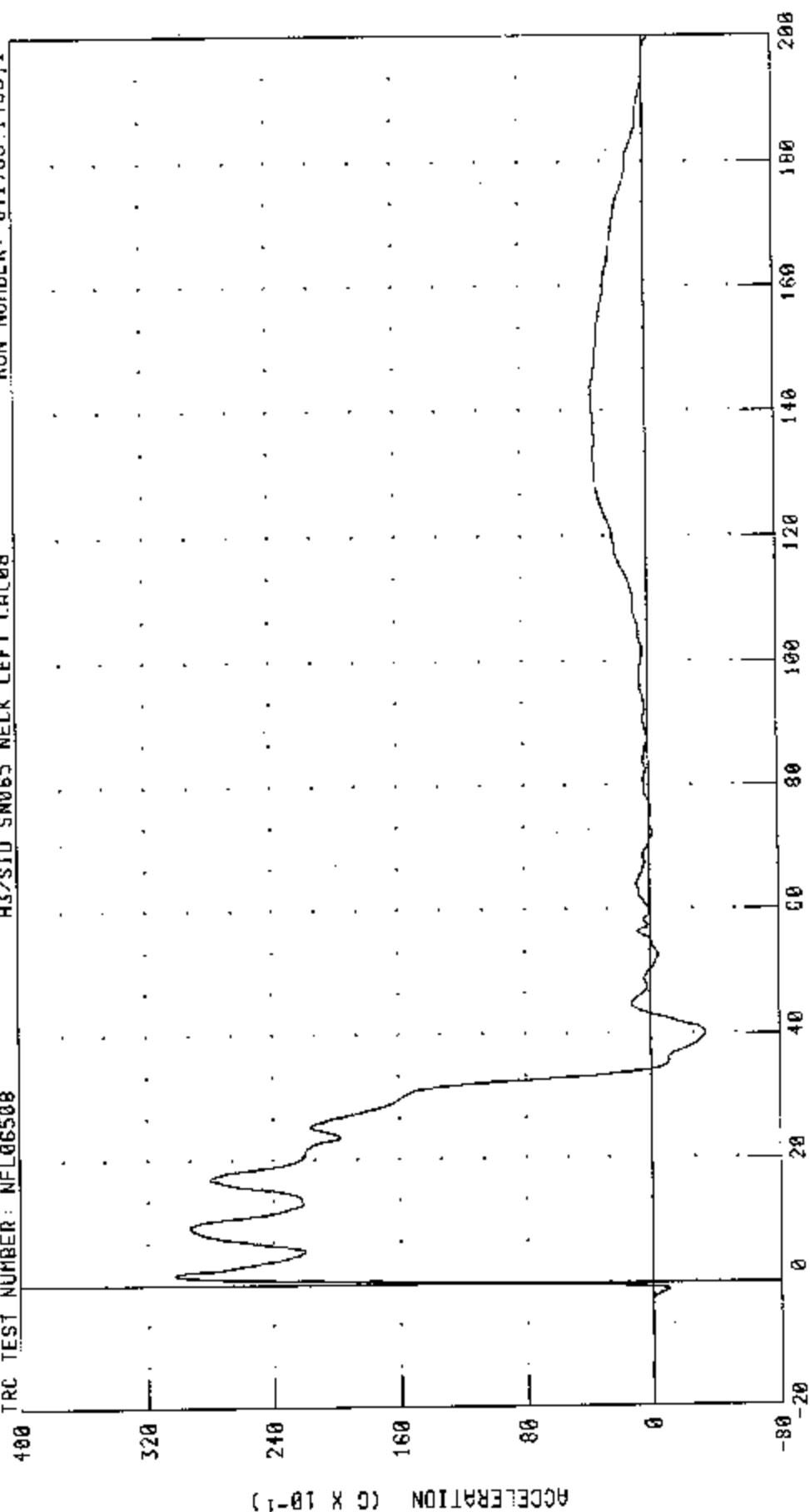
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

PENDULUM DECELERATION

H3/SID SN065 NECK LEFT CAL08

RUN NUMBER: 041703.1453.1

TRC TEST NUMBER: NFL06508



TIME (MS)

PEAK DATA: 30 27 G @ 1.60 MS; -3.40 G @ 40.00 MS

CHANNEL: PENXC FILTER: CH. CLASS 180

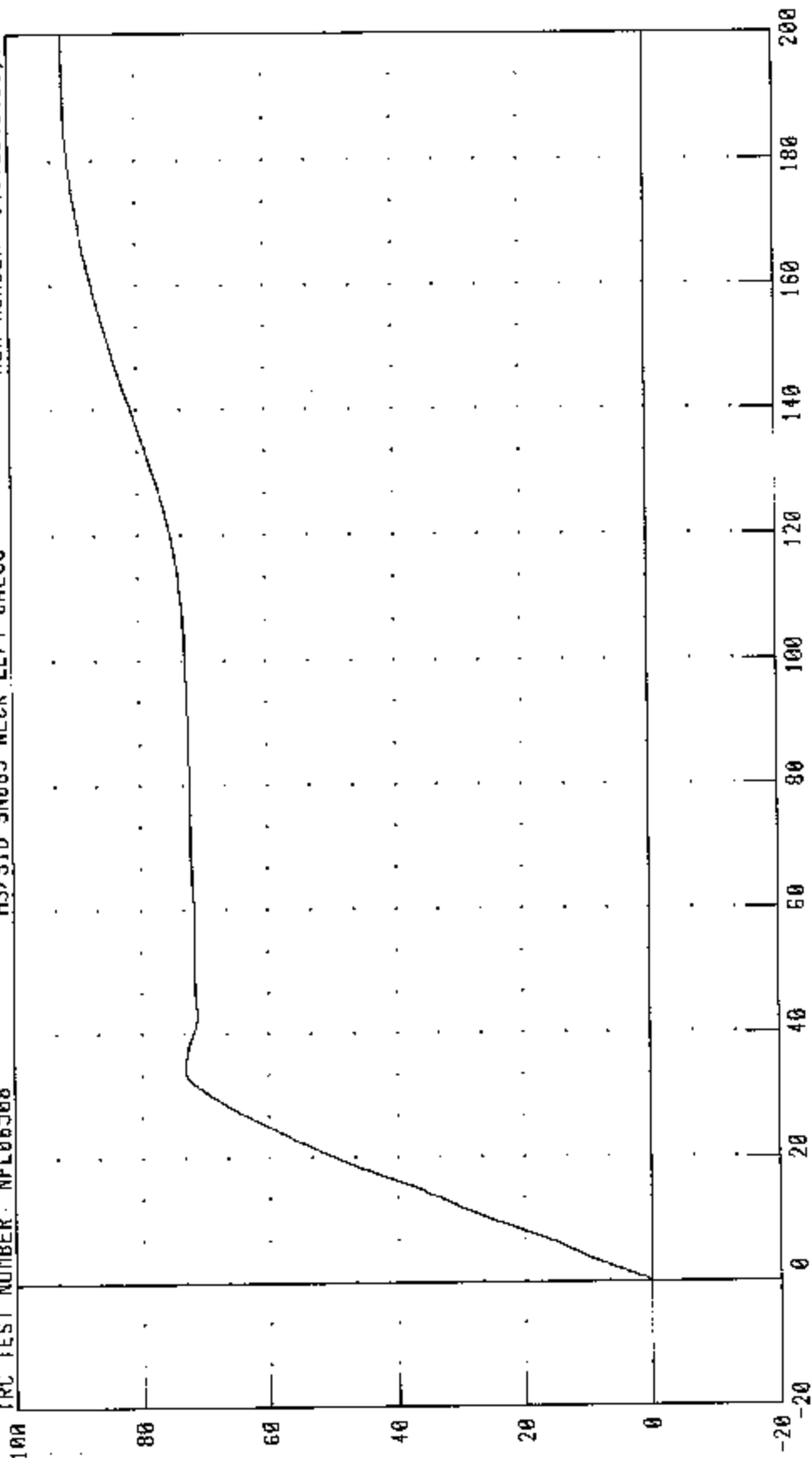
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

INTEGRATED PENULUM VELOCITY

RUN NUMBER: 041703.1453,1

TRC TEST NUMBER: NFL06508

H3/SID SN065 NECK LEFT CAL08



VELOCITY (M/S X 10-1)

TIME (MS)

PENK DATA: 9.14 M/S @ 194.72 MS; -0.01 M/S @ -0.64 MS

CHANNEL: PENXVI FILTER: CH. CLASS 180

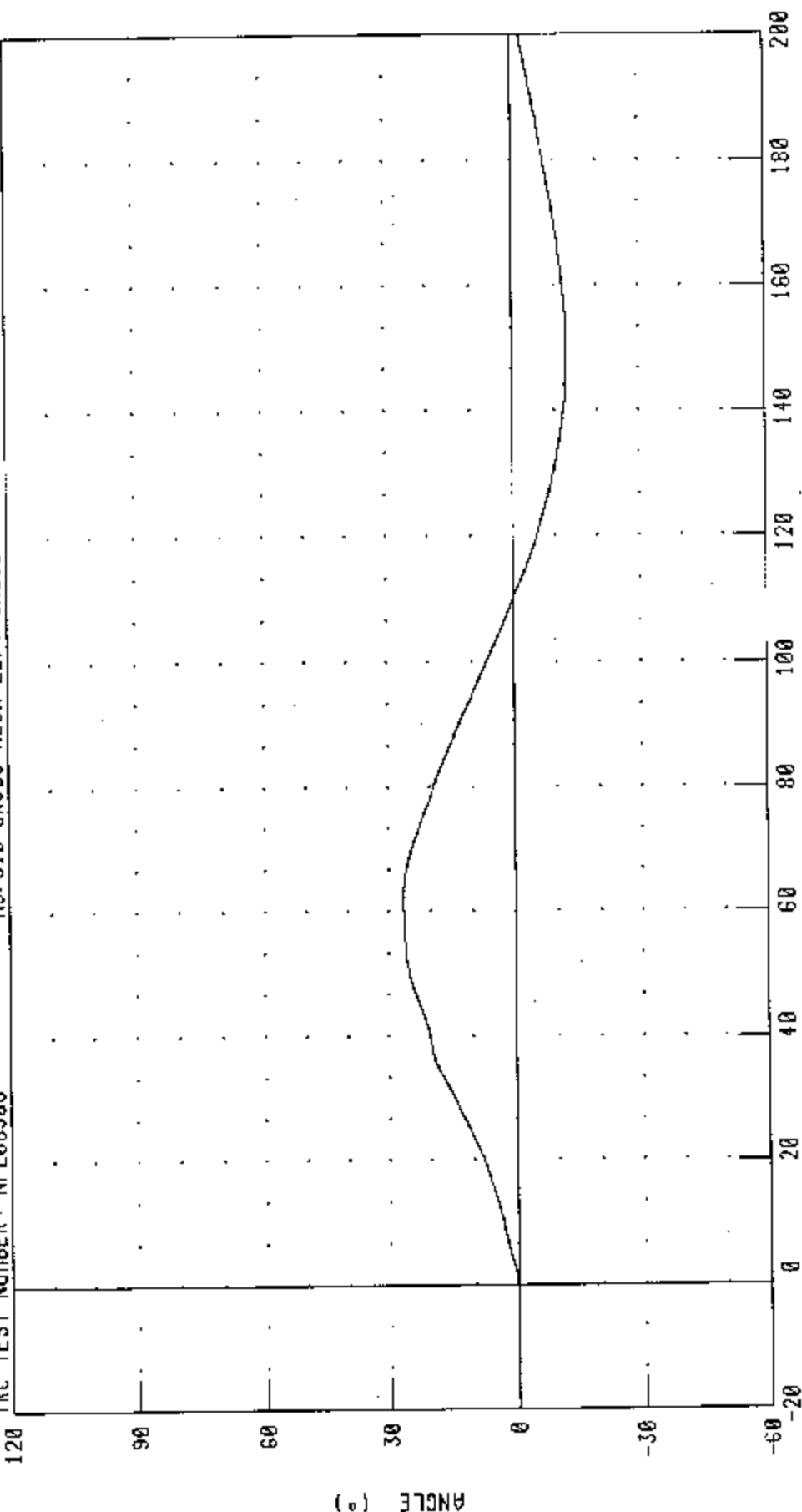
H3/SID DUNNY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT BASE OF NECK

RUN NUMBER: 041703.1453;1

TRC TEST NUMBER: NFL06508

H3/SID SH065 NECK LEFT CAL08



TIME (MS)

PEAK DATA: 26.33 ° @ 62.16 MS; -12.80 ° @ 150.00 MS

CHANNEL: BETA FILIER: CH. CLASS 60

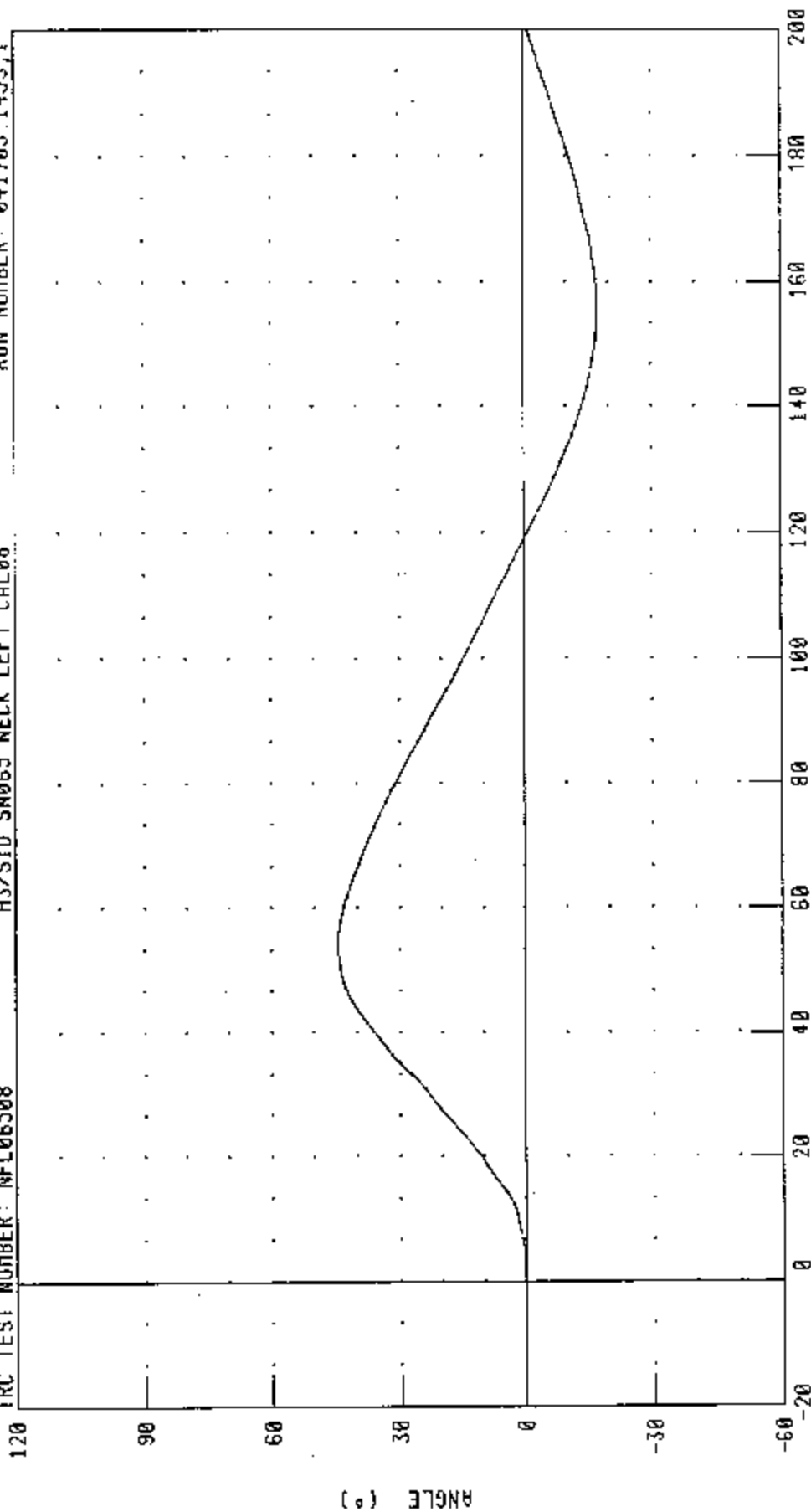
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: NFL06508

H3/SID SN065 NECK LEFT CAL08

RUN NUMBER: 041703.1453.1



CHANNEL: THETA

FILTER: CH. CLASS 60

PEAK DATA: 44 40 ° @ 54.56 MS, -17.43 ° @ 156.08 MS

ANGLE (°)

C-82

030415

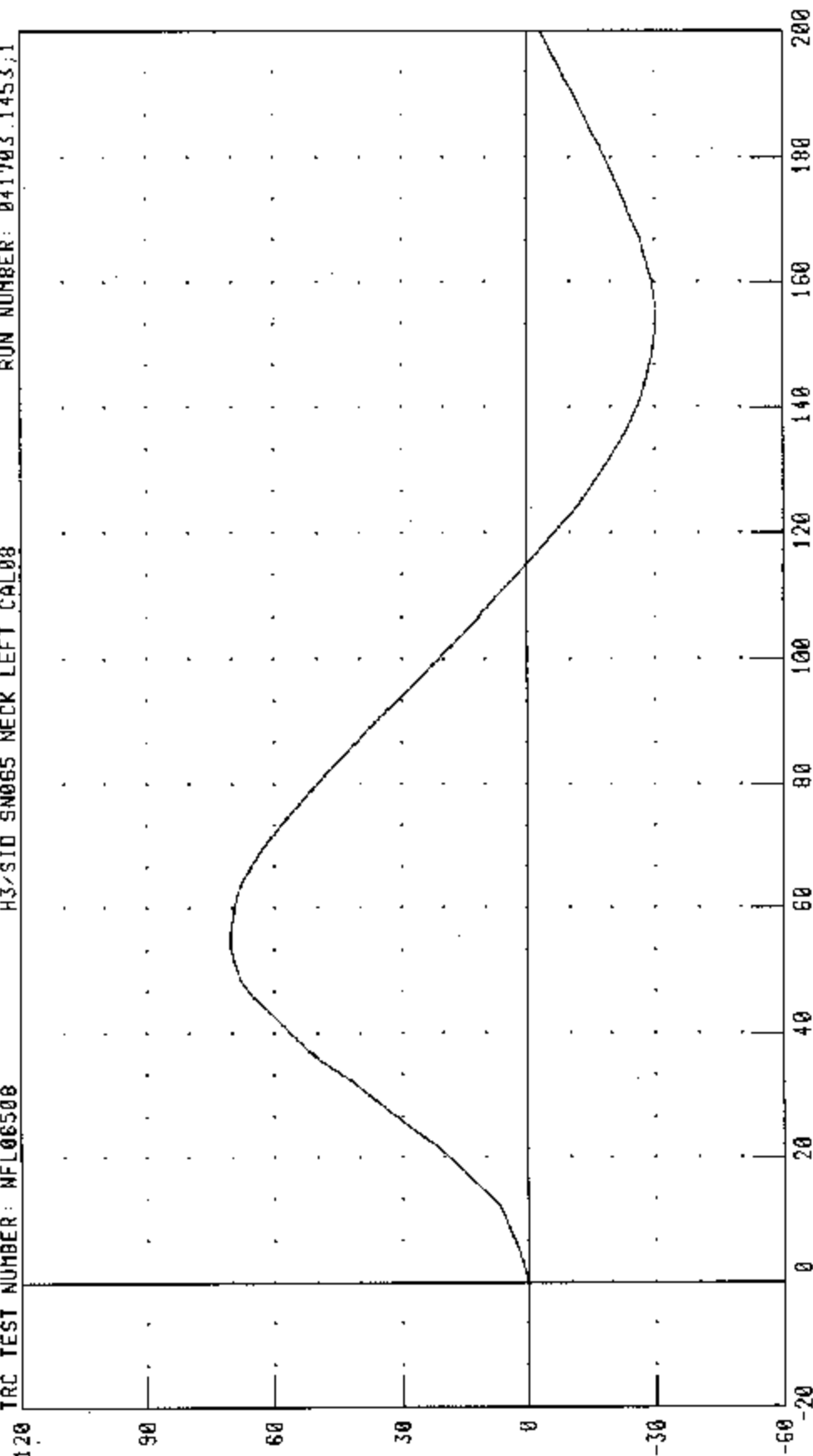
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL ROTATION

TRC TEST NUMBER: WFL06508

H3/SID SN065 NECK LEFT CAL08

RUN NUMBER: 041703.1453.1



TIME (MS)

PEAK DATA 70.33 ° @ 55.28 MS, -30.12 ° @ 154.48 MS

CHANNEL: TOTAN FILTER: CH. CLASS 60

ANGLE (°)

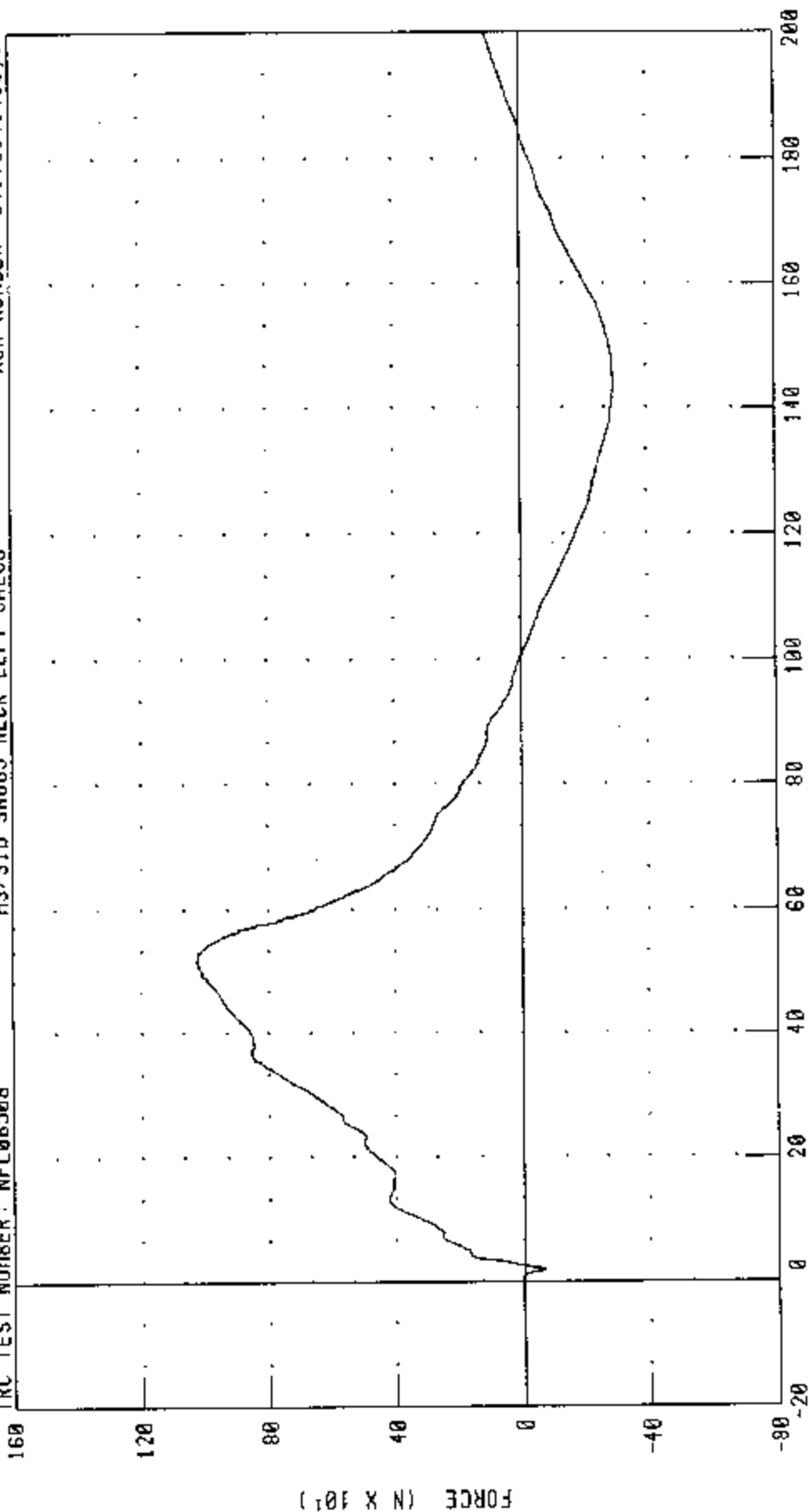
H3/SID DUMMY CALIBRATION -- IFFT LATERAL NECK TEST

NECK FORCE Y AXIS

TRC TEST NUMBER: NFL06508

H3/SID SN065 NECK LEFT CAL08

RUN NUMBER: 041703.1453;1



TIME (MS)

PEAK DATA: 1825.04 N @ 51.60 MS, -295.95 N @ 143.60 MS

CHANNEL: NEKYF FILTER: CH. CLASS 1000

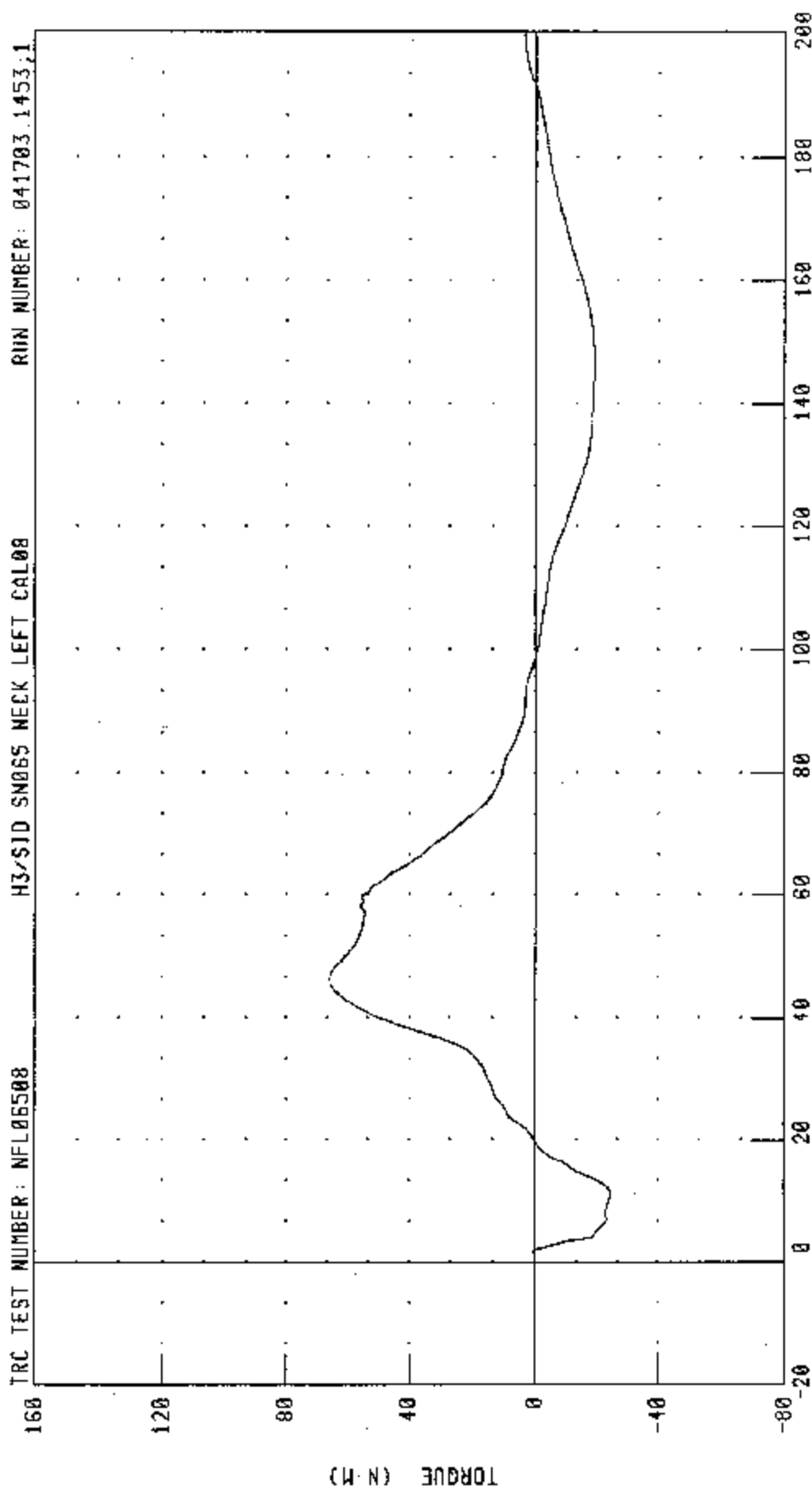
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK MOMENT X AXIS

TRC TEST NUMBER: NFL06508

H3/SID SN065 NECK LEFT CAL08

RUN NUMBER: 041703.1453.1



TIME (MS)

CHANNEL: NECKXM FILTER: CH. CLASS 600

PEAK DATA: 65.77 N·m @ 46.48 ms; -24.63 N·m @ 11.20 ms

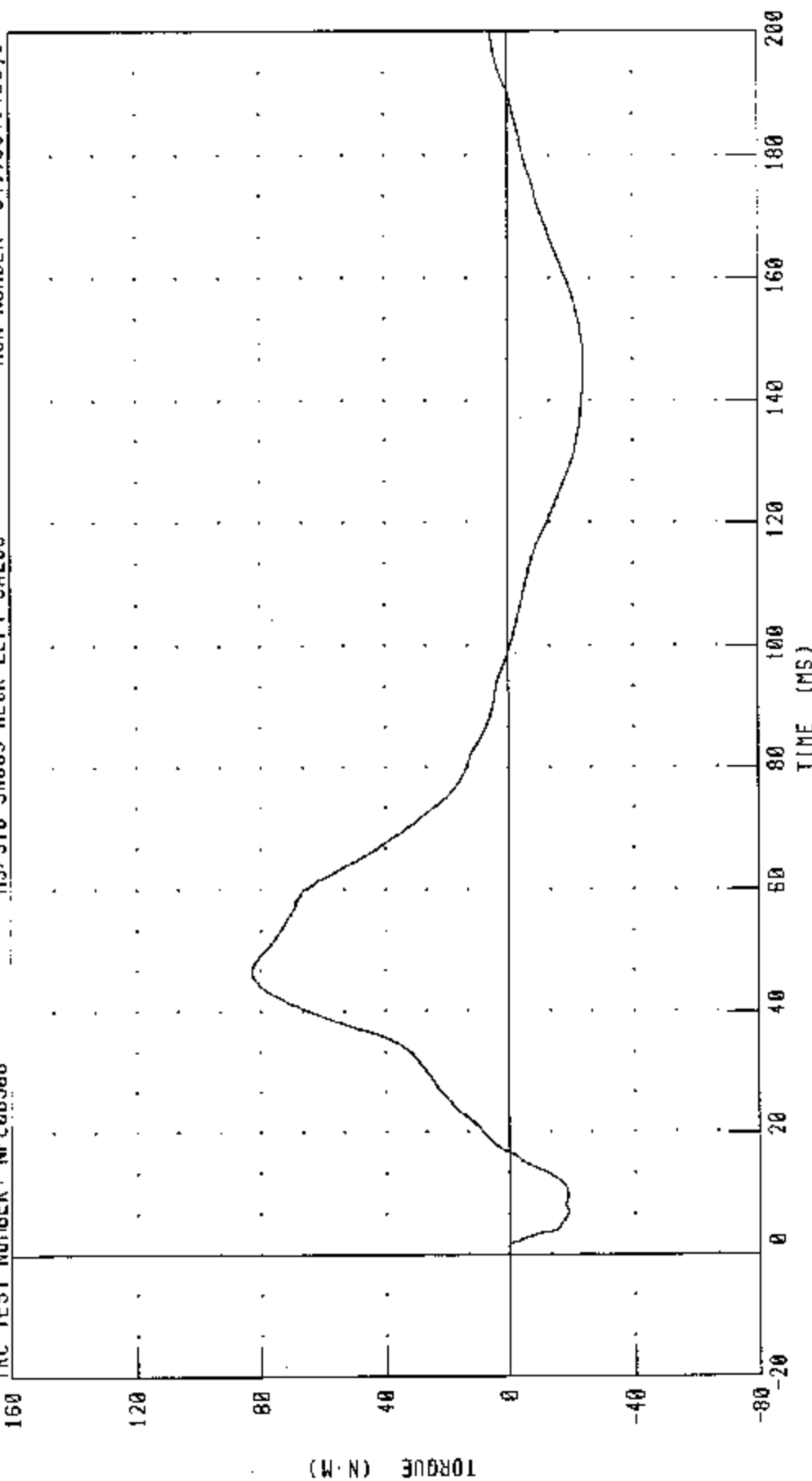
H3/SID DUNNY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRC TEST NUMBER: NFL06508

H3/SID SN065 NECK LEFT CAL08

RUN NUMBER: 041703.1453.1



TIME (MS)

PEAK DATA: 82.84 N M @ 46.64 MS, -24.24 N M @ 145.60 MS

CHANNEL: NEKOM FILTER CH. CLASS 600

TORQUE (N·M)

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

16-APR-03

LEFT SIDE CONFIGURATION

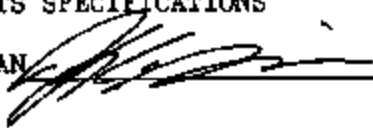
TRC INC.

TEST NO: STL06508

572F SID SN065 L.THORAX CAL08

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	41.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.30 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	43.2 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	39.7 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	19.6 G

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 041603.1118;1

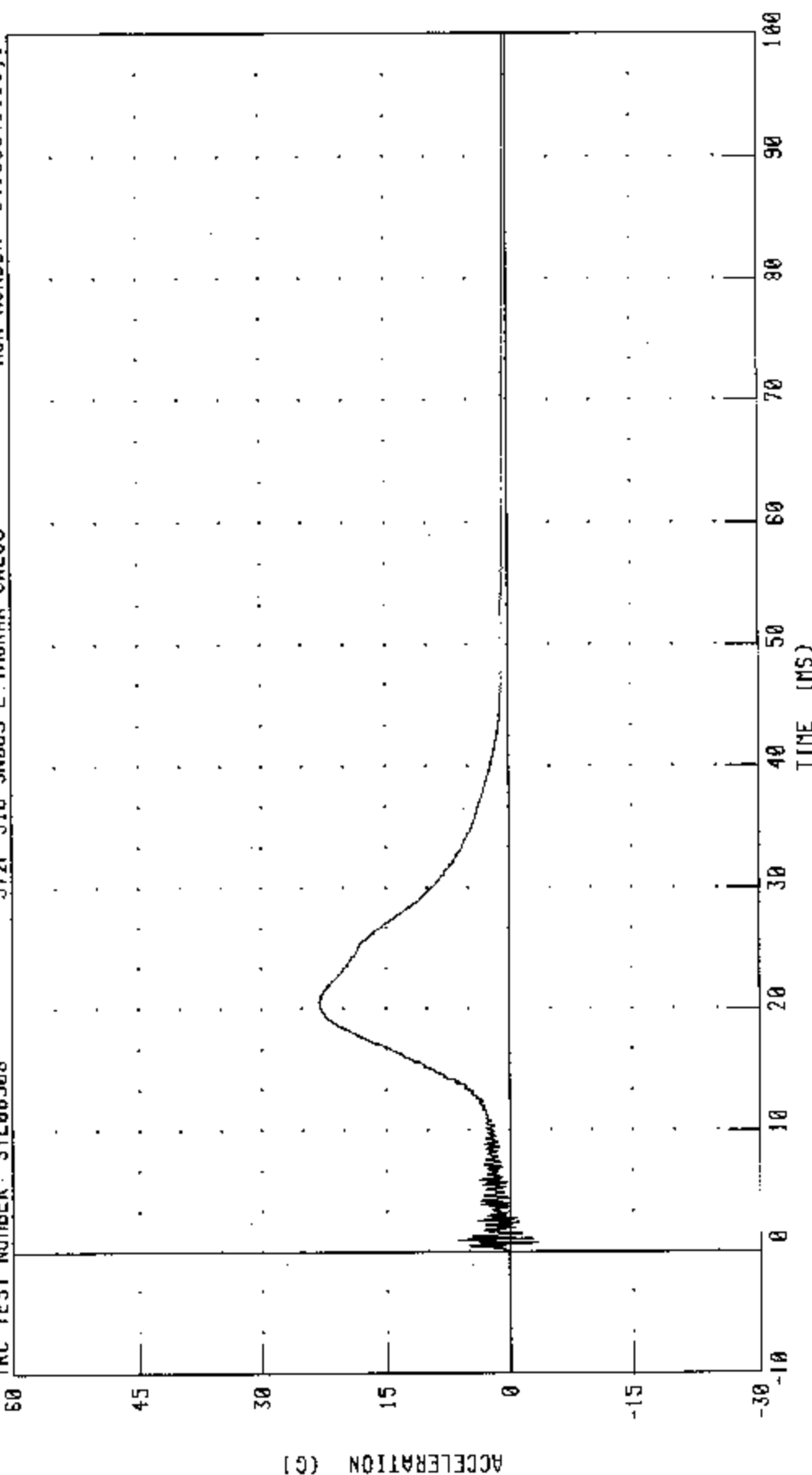
PART 572-F S.I.D THORAX CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

TRC TEST NUMBER: STL06508

572F SID SN065 L THORAX CAL08

RUN NUMBER: 041603.1110.1



PEAK DATA: 22 90 G @ 20.64 MS; -3.34 G @ 0.72 MS

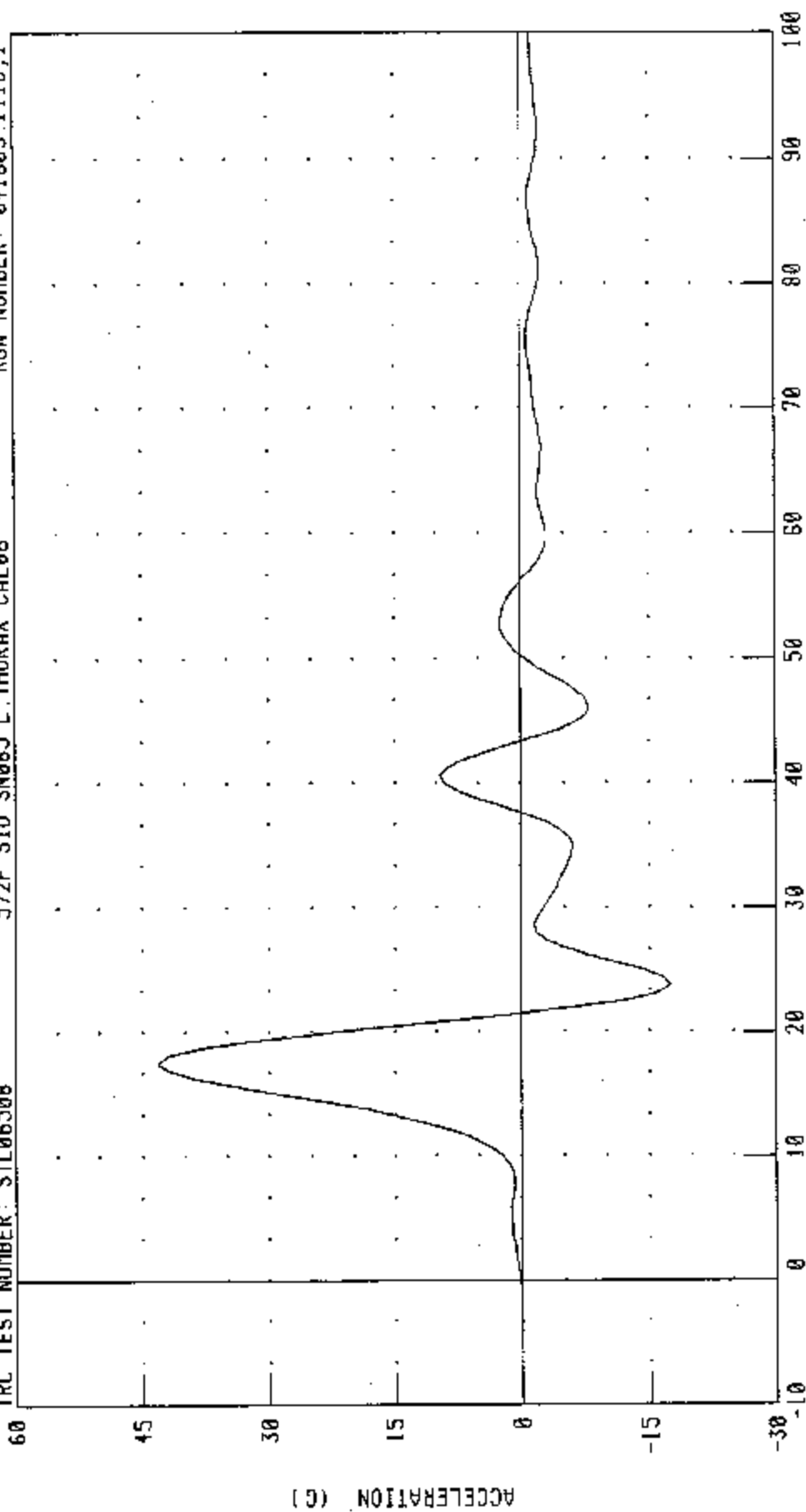
CHANNEL: PENXC FILTER: CH. CLASS 1000

PART 572-F S I D THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT UPPER RIB ACCELERATION Y AXIS

572F SID SN065 L THORAX CAL08 RUN NUMBER: 041603.111B,1

TRC TEST NUMBER: STL06508



TIME (MS)

PEAK DATA: 43.18 G @ 17.50 MS; -17.39 C @ 23.75 MS

CHANNEL: LURYC FILTER: FIR 100

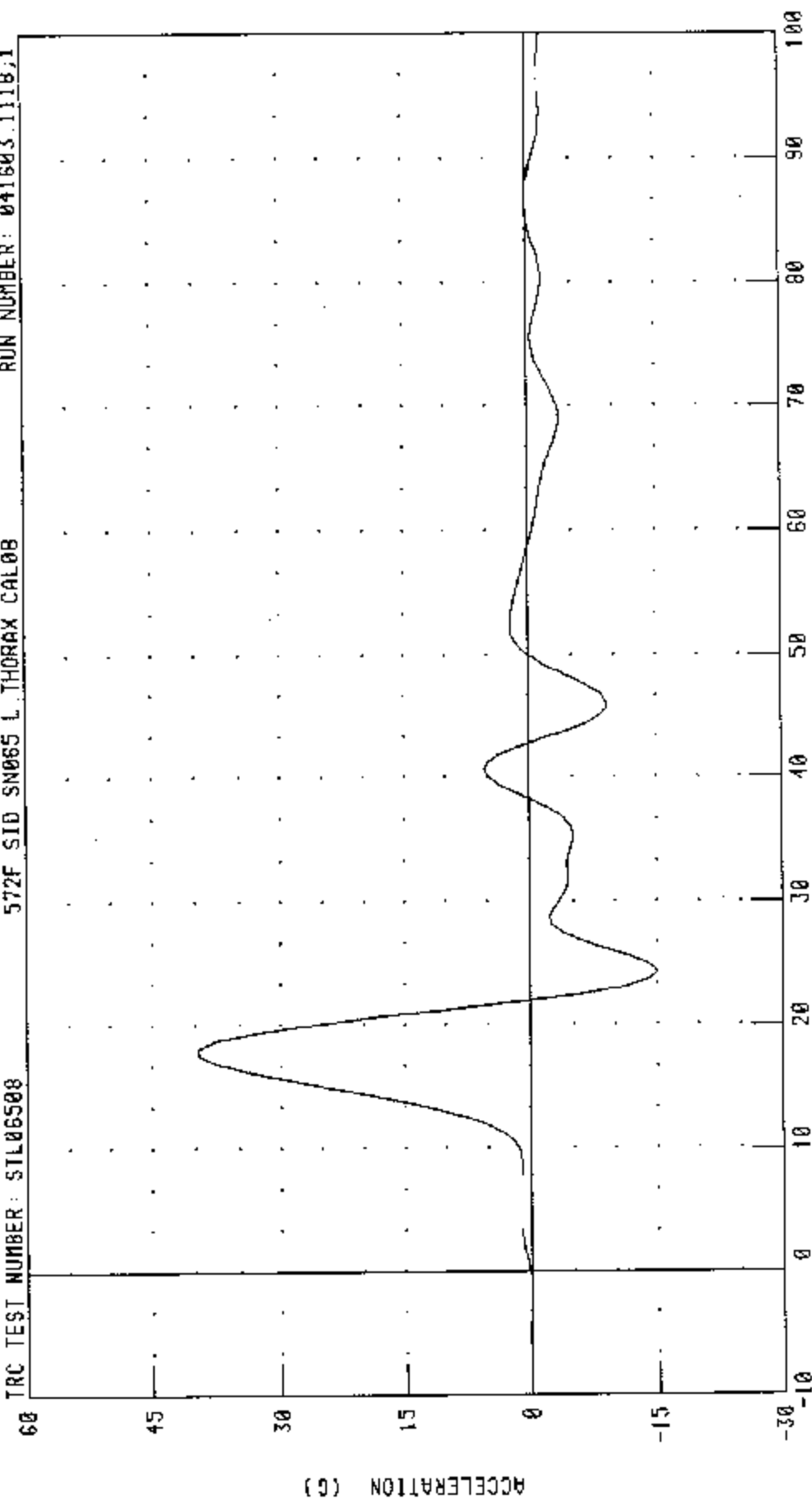
PART 572-F S.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT LOWER RIB ACCELERATION Y AXIS

TRC TEST NUMBER: STL06508

572F SID SN065 L THORAX CAL08

RUN NUMBER: 041603.1118.1



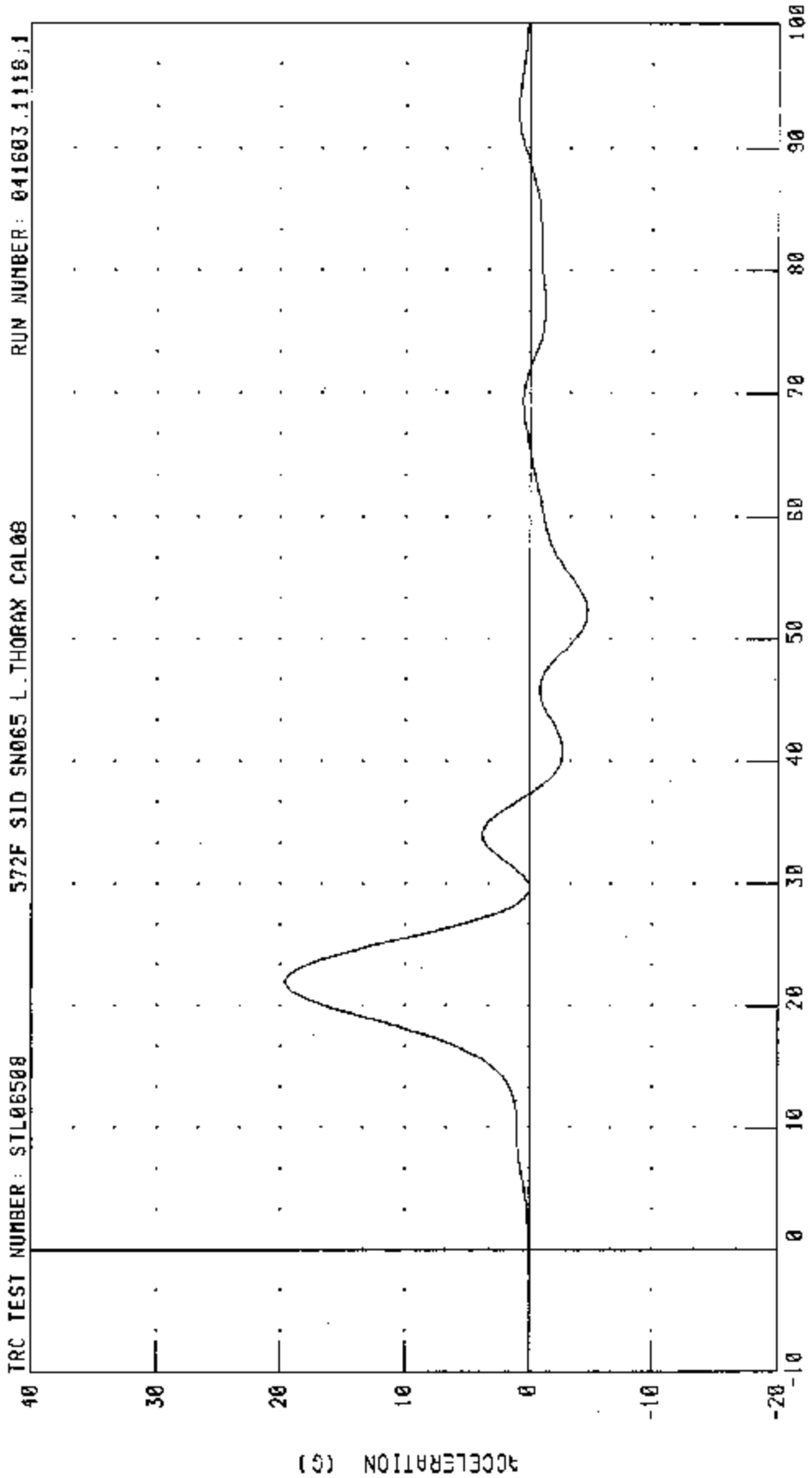
TIME (MS)

PEAK DATA: 39.72 G @ 18.13 MS, -14.99 G @ 24.38 MS

CHANNEL: LLRYC FILTER: FIR 100

PART 572-F S.I.O. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS



CHANNEL: T12YG FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

THORACIC SHOCK ABSORBER TESTS

SIDE IMPACT DUMMY

17-APR-03

TRC INC.

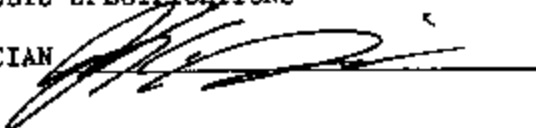
572F SN065 DAMPER TEST CAL08

TEST NUMBERS: DP06508A, DP06508B, DP06508C

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		18.9 - 25.5 C	21.7 DEG. C
RELATIVE HUMIDITY		10 - 70 %	38.0 %
VELOCITY 2.78 M/S	FORCE	683 - 944 N	840 N
	DISPLACEMENT	29.8 - 34.6 MM	32.2 MM
VELOCITY 4.26 M/S	FORCE	1733 - 2100 N	2005 N
	DISPLACEMENT	31.6 - 37.2 MM	34.4 MM
VELOCITY 6.14 M/S	FORCE	3824 - 4542 N	4040 N
	DISPLACEMENT	33.3 - 39.6 MM	38.4 MM

DAMPER SETTING = 5.5

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 041703.1401;1

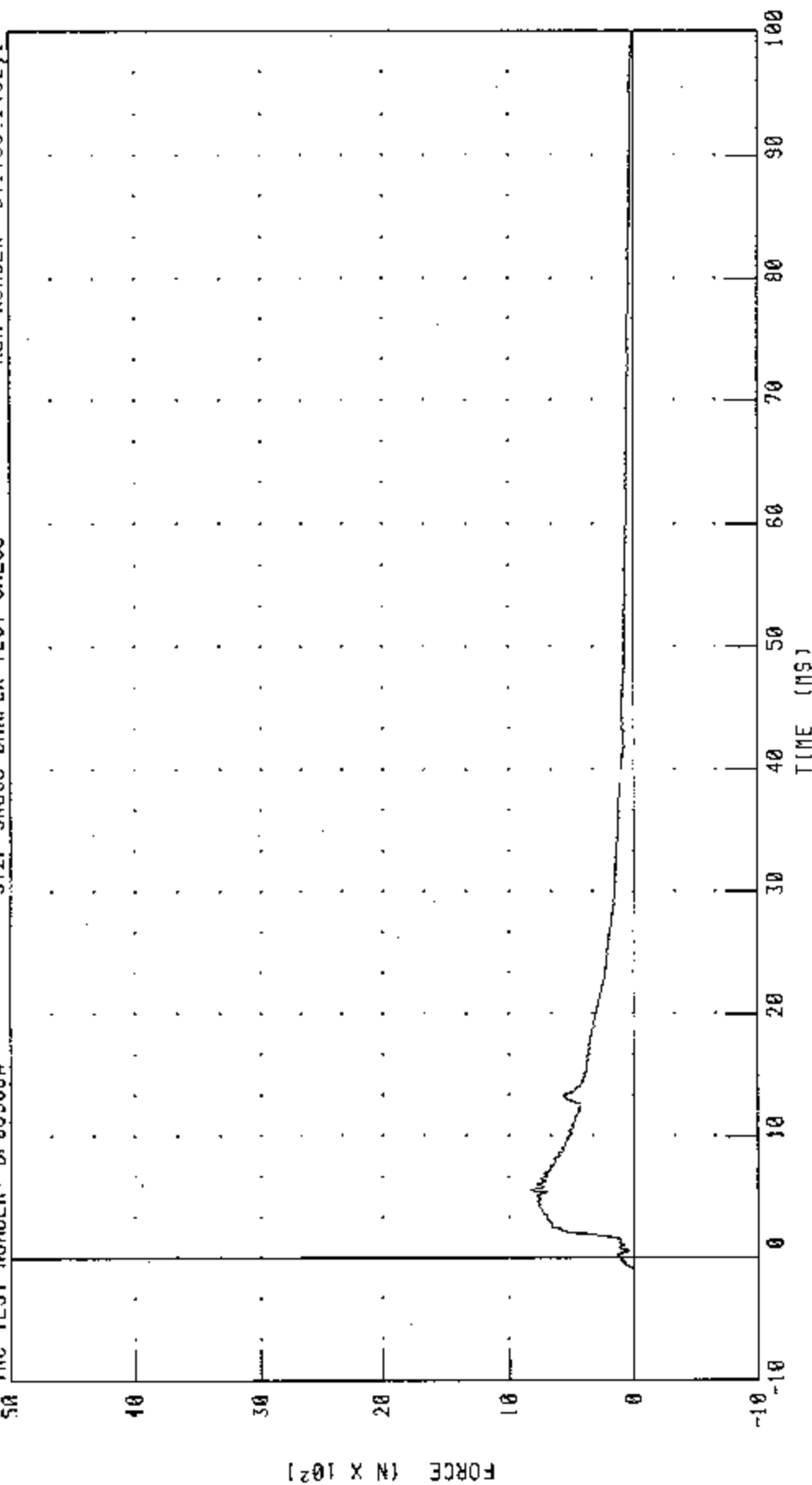
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 N/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP08508A

572F SN065 DAMPER TEST CAL08

RUN NUMBER: 041703.1402.1



PEAK DATA: 839.51 N @ 5.60 MS, 1.60 N @ 8.64 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

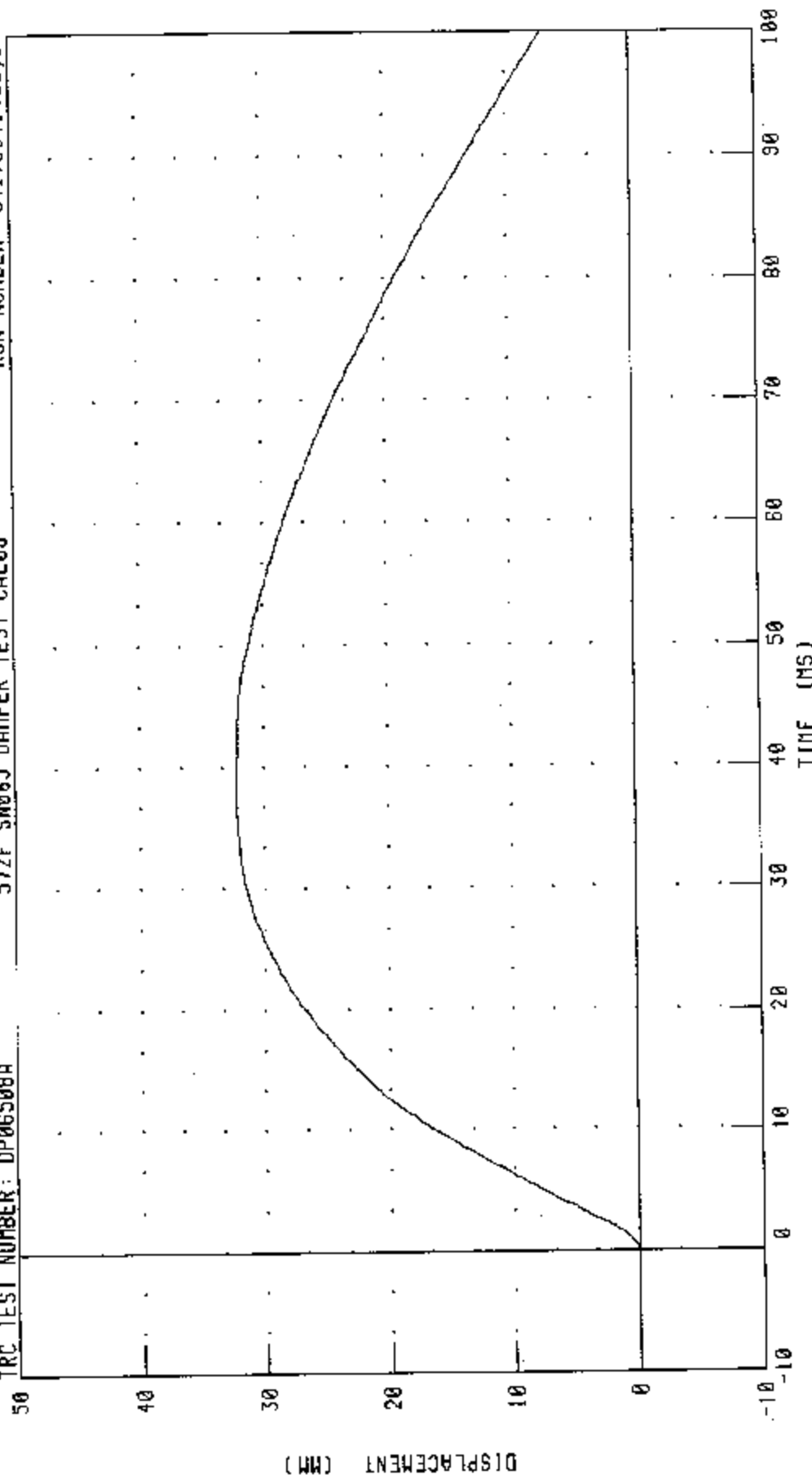
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (3.0 M/SEC)

SHOCK ABSORBER DISPLACEMENT

572F SN065 DAMPER TEST CAL08

TRC TEST NUMBER: DP06508A

RUN NUMBER: 041703.1402;1



PEAK DATA: 32.15 MM @ 36.88 MS; 0.00 MM @ 3.84 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

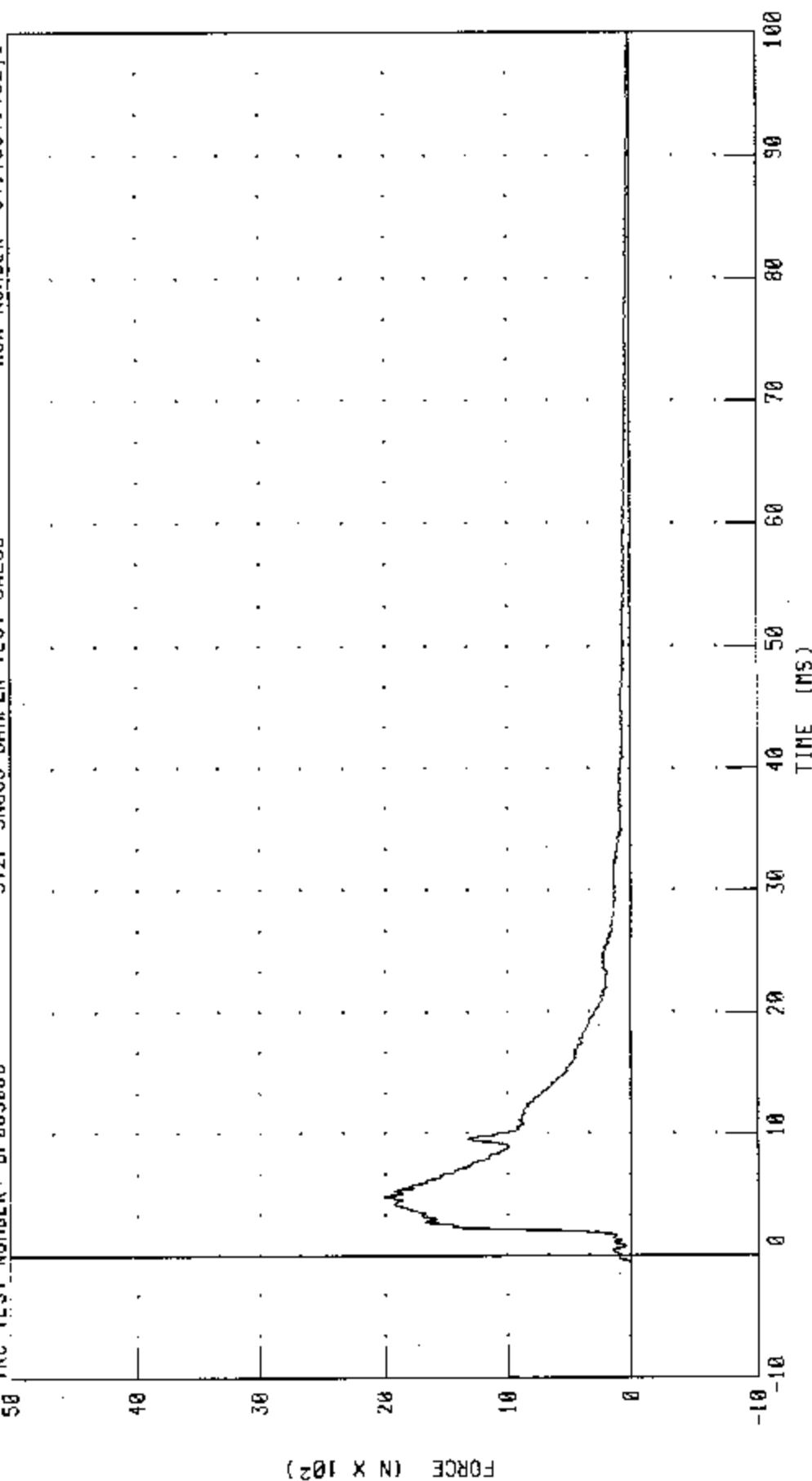
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 M/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP065088

572F SN065 DAMPER TEST CAL08

RUN NUMBER: 041703.1402.1



PEAK DATA: 2004 54 N @ 4.68 MS; -2.26 N @ -6.80 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

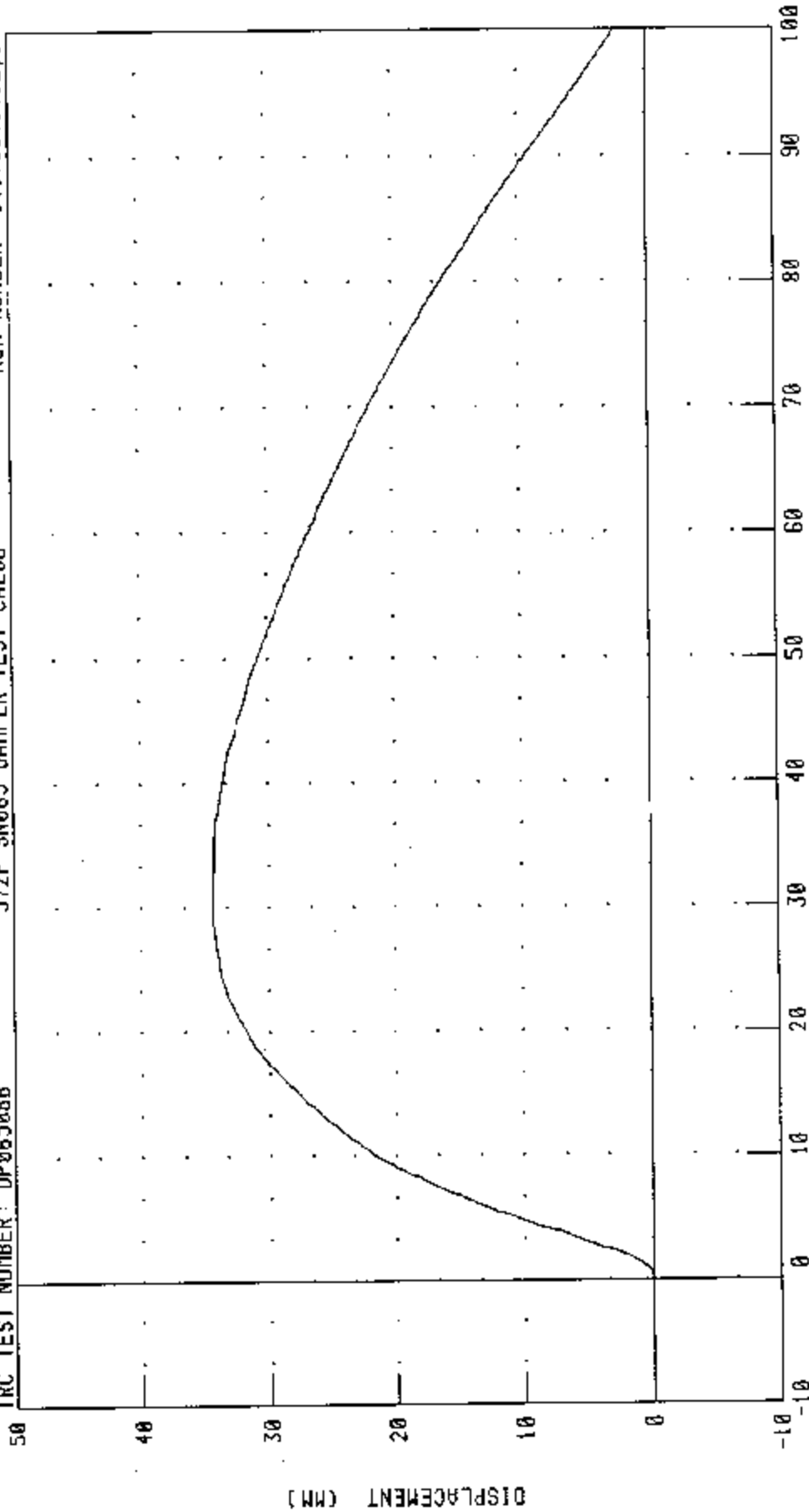
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (4.3 H/SEC)

SHOCK ABSORBER DISPLACEMENT

RUN NUMBER: 041703.1402;1

IRC TEST NUMBER: DP06508B

572F SN065 DAMPER TEST CAL08



TIME (MS)

PEAK DATA: 34.36 MM @ 30.64 MS; 0.00 MM @ -9.52 MS

CHANNEL: CSTYO FILTER: CH. CLASS 1000

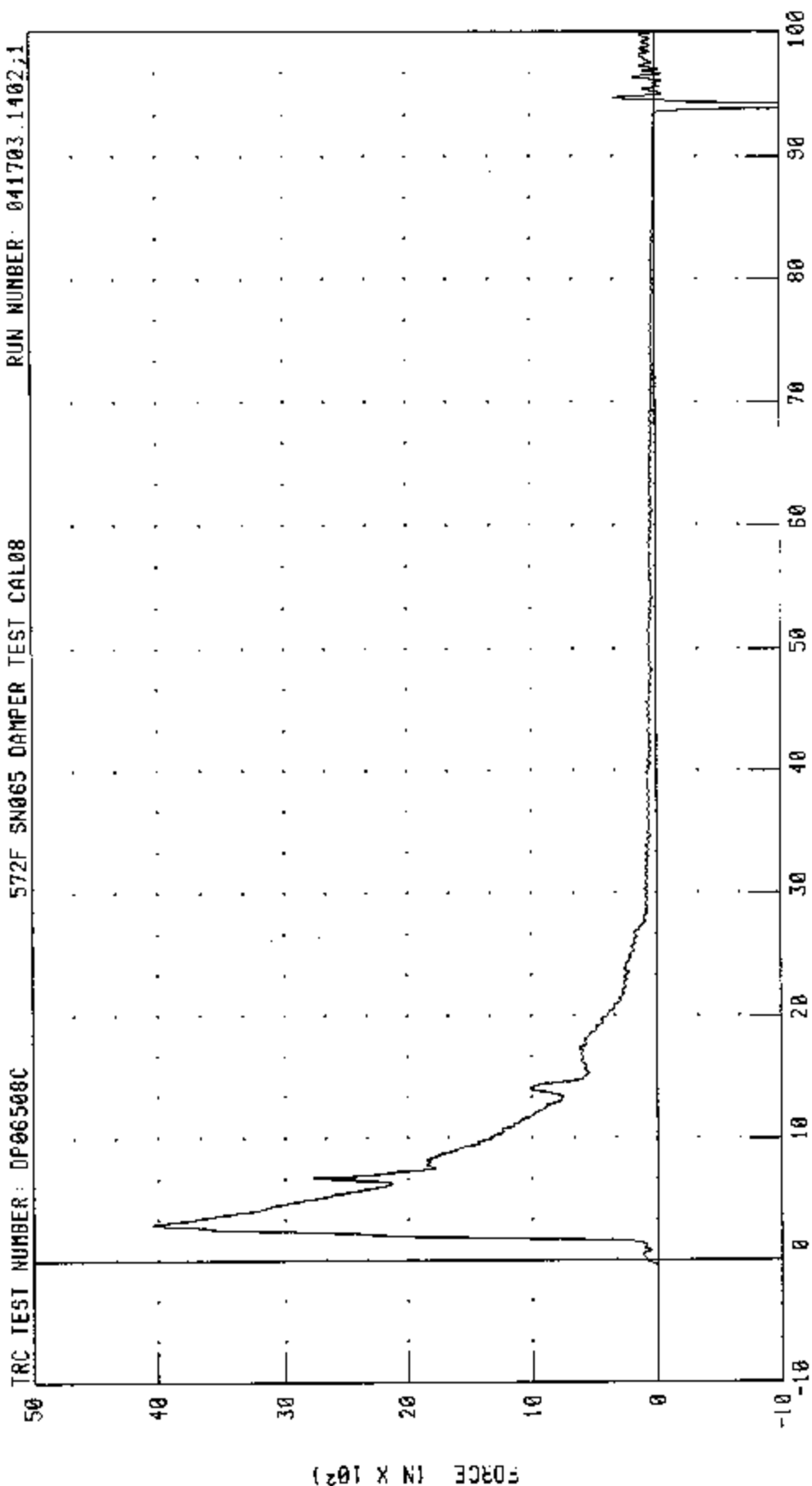
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 N/SEC)

SHOCK ABSORBER RESISTIVE FORCE

TRC TEST NUMBER: DP06508C

572F SN065 DAMPER TEST CAL08

RUN NUMBER: 041703.1402.1



TIME (MS)

PEAK DATA: 4040.25 N @ 3.04 MS, -2244.23 N @ 94.00 MS

CHANNEL: DAMPF FILTER: CH. CLASS 1000

FORCE (N X 10²)

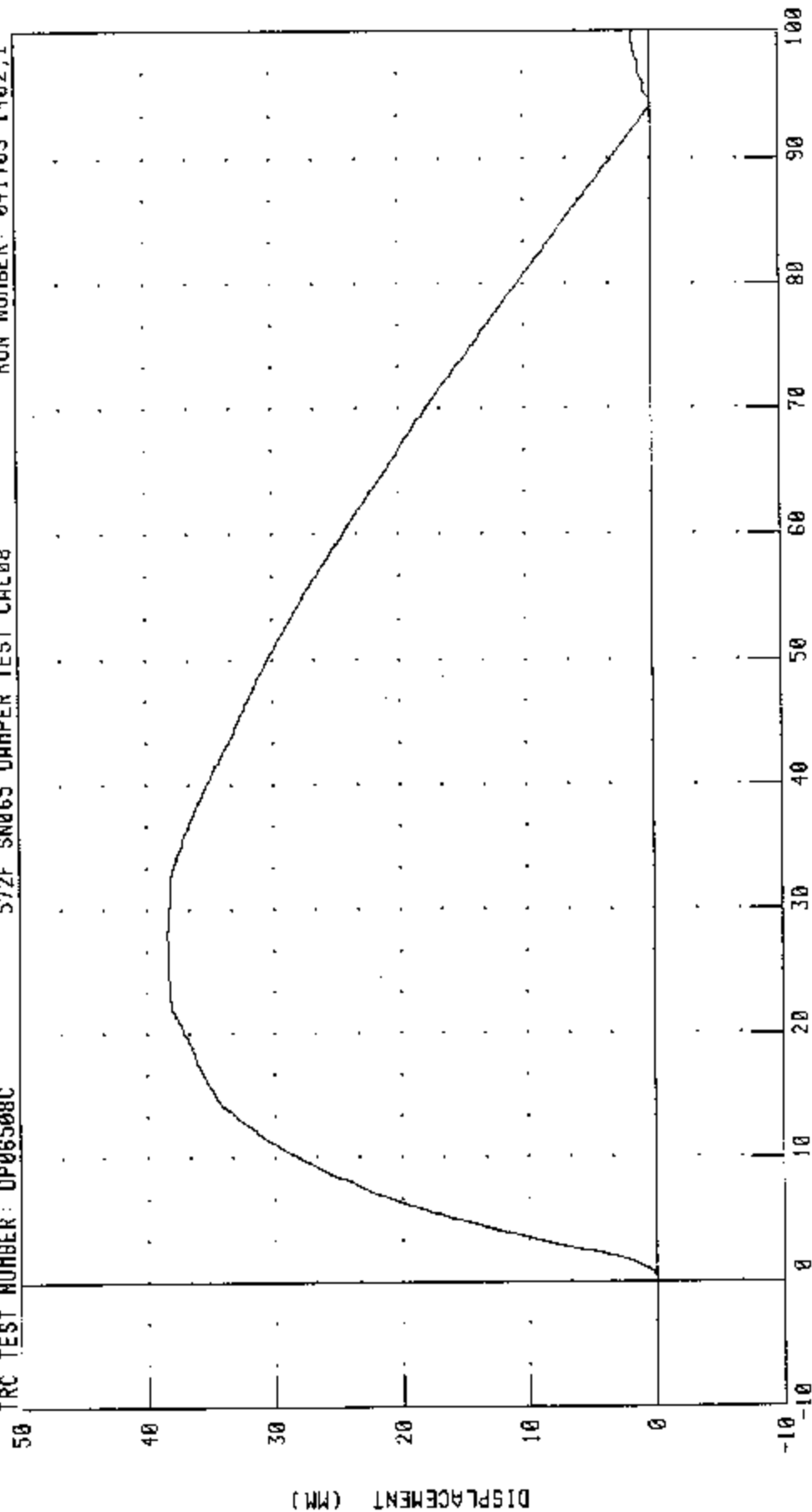
PART 572-F S.I.D. THORACIC SHOCK ABSORBER CALIBRATION (6.1 M/SEC)

SHOCK ABSORBER DISPLACEMENT

572F SN065 DAMPER TEST CAL08

RUN NUMBER: 041703 1402;1

TRC TEST NUMBER: DP06508C



TIME (MS)

PEAK DATA: 38.39 MM @ 27.84 MS; -0.02 MM @ 94.40 MS

CHANNEL: CSTYD FILTER: CH. CLASS 1000

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 16-Apr-03

TRC, INC.

TEST NO: 065C08TF1

572B SN 065 TORSO FLEX CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 °C	21.9 °C
RELATIVE HUMIDITY	10 - 70 %	39 %
FORCE AT 0 DEG. FLEXION	-27 - 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 - 151 N	115.7 N
FORCE AT 30 DEG OF FLEXION	151 - 205 N	160.2 N
FORCE AT 40 DEG OF FLEXION	205 - 258 N	209.1 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	8 °

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

572B Abdomen Compression Test

HIH SID Serial No. 065 Calibration No. 08 - 1

Test Date 04/16/2003

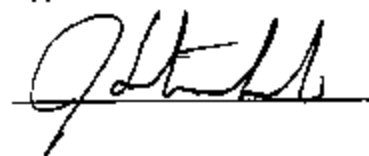
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	22.2 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	7.3 - 8.1 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician



Approved



04.18.2003 09:08:28 260

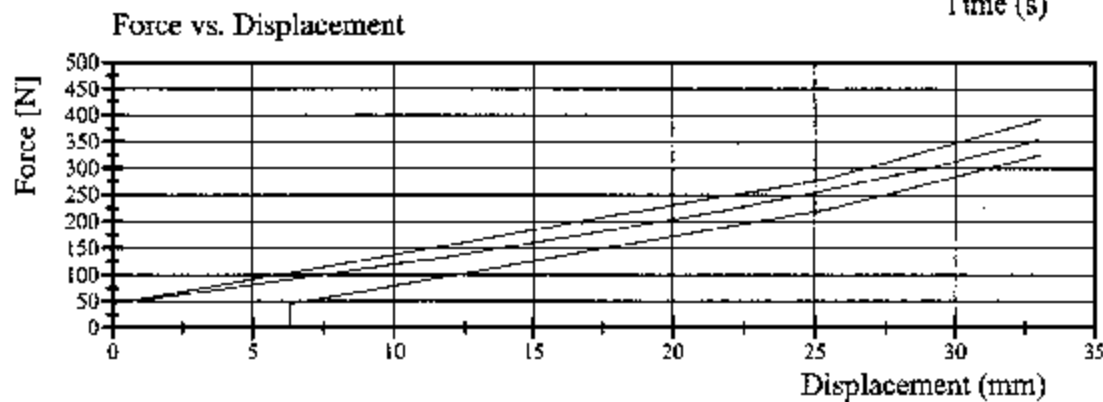
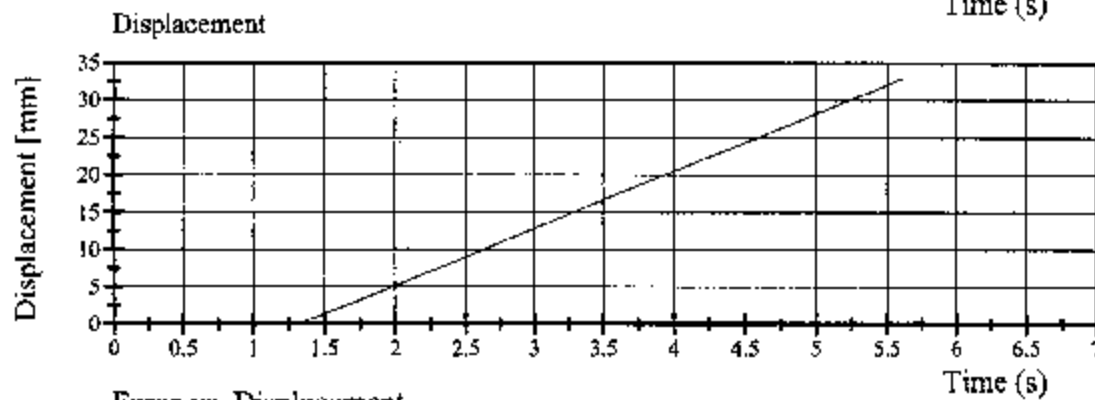
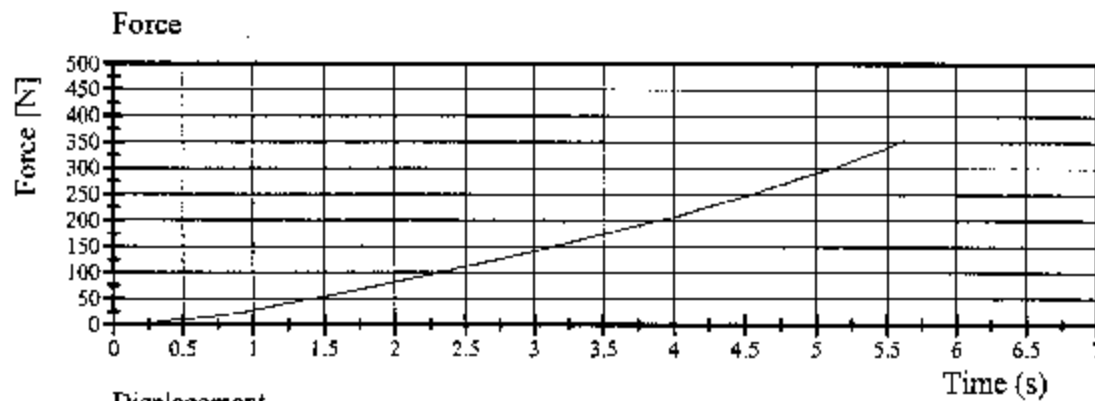


Transportation Research Center Inc.

572B Abdomen Compression Test

HIH SID Serial No. 065 Calibration No. 08 - 1

Test Date 04/16/2003



TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

16-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL06508

572F SN065 LEFT PELVIS CAL08

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	41.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.25 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	53.5 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	5.8 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 041603.1109;1

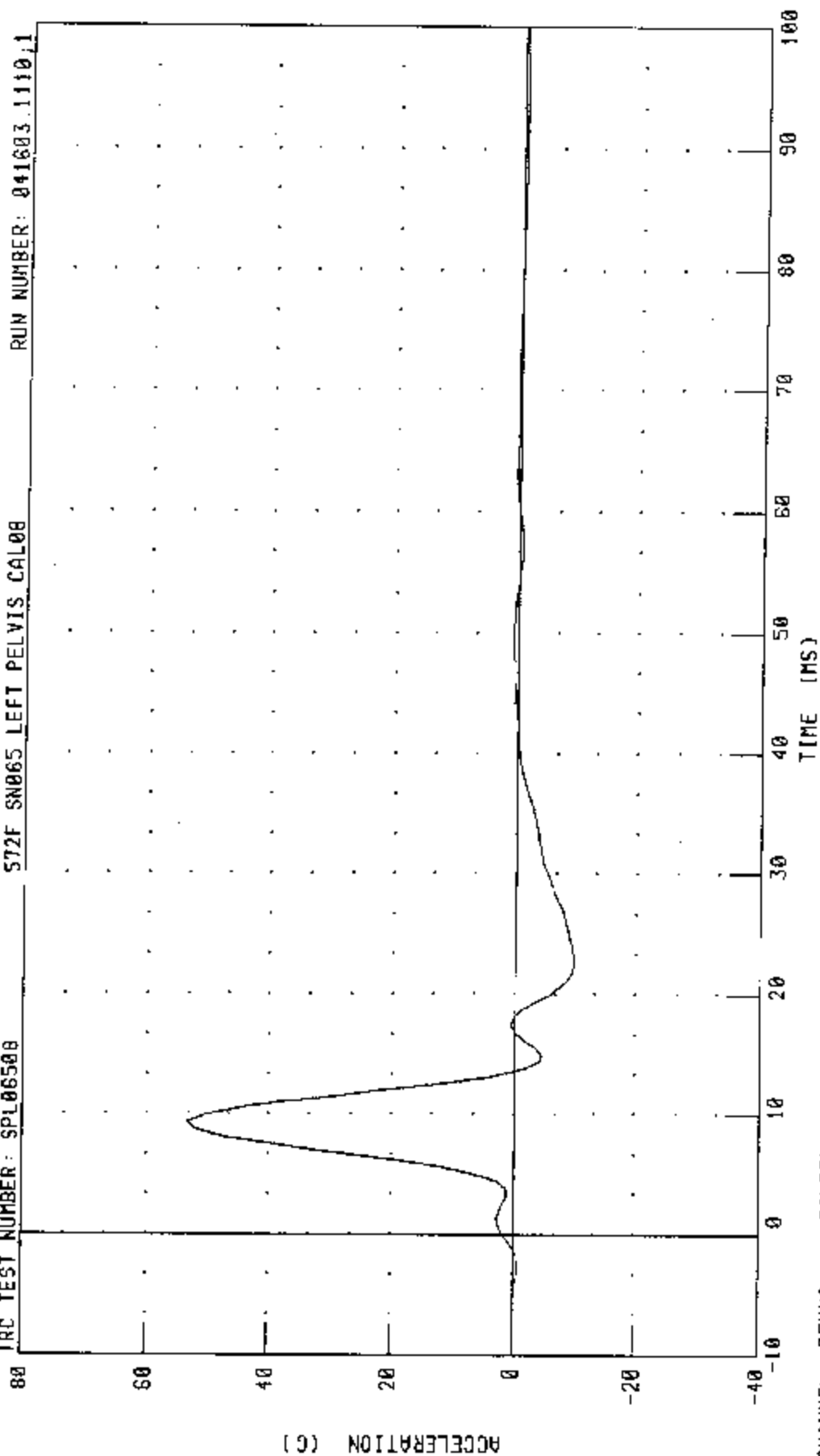
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

IRC TEST NUMBER: SPL06500

572F SN065 LEFT PELVIS CAL08

RUN NUMBER: 041603.1110.1



CHANNEL: PEVYG FILTER: FIR 100

PEAK DATA: 53.51 G @ 9.37 MS; -9.78 G @ 22.50 MS

PART 572-F S I D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

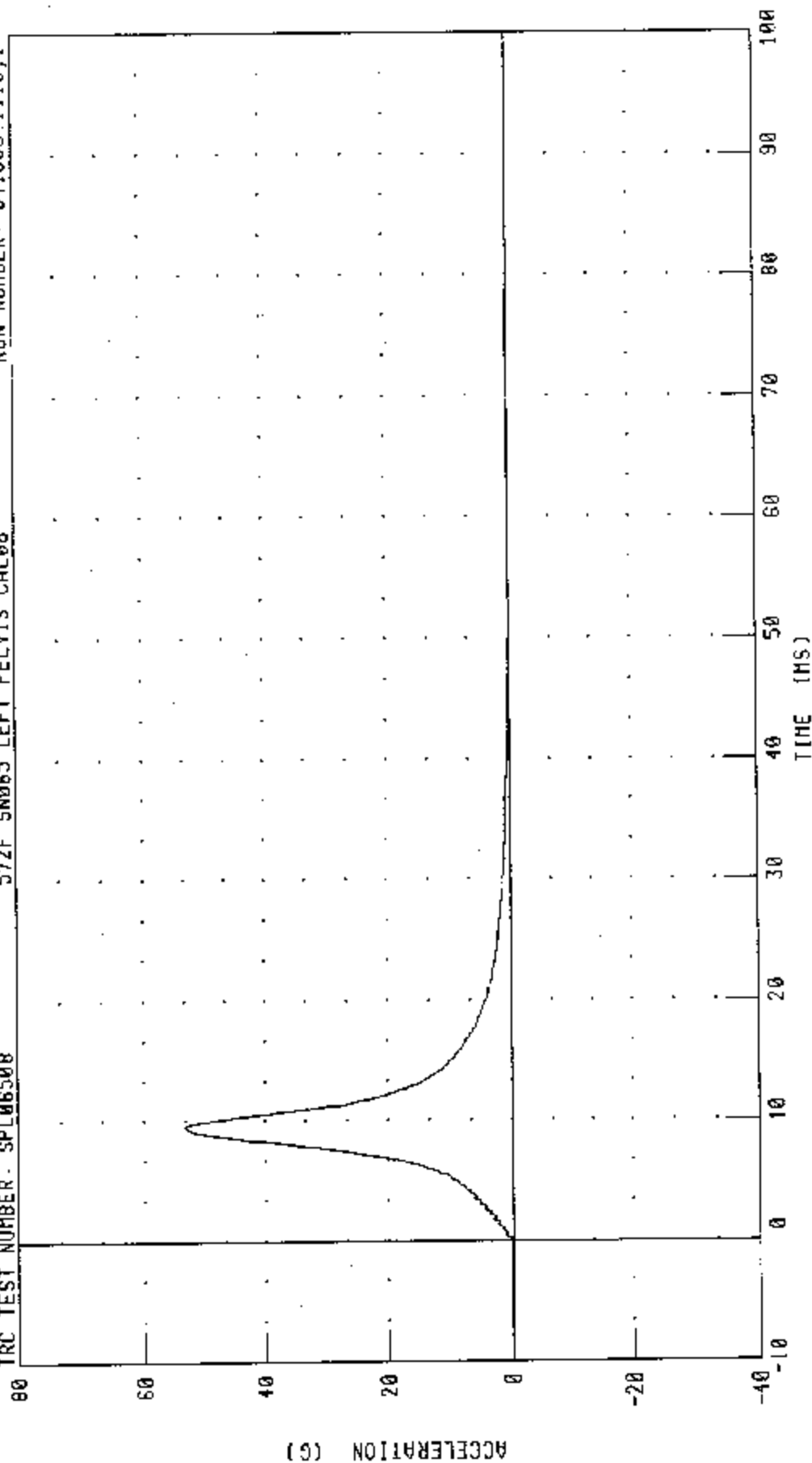
PENDULUM DECELERATION

572F 5N065 LEFT PELVIS CAL08

IRC TEST NUMBER: SPL06508

572F 5N065 LEFT PELVIS CAL08

RUN NUMBER: 041603 1110.1



CHANNEL: PENXC

FILTER: CH. CLASS 1000

TIME (MS)

PEAK DATA: 53.29 G @ 9.52 MS, -0.11 G @ 81.60 MS

Calibration Test Results

Post-Test

SID: 028

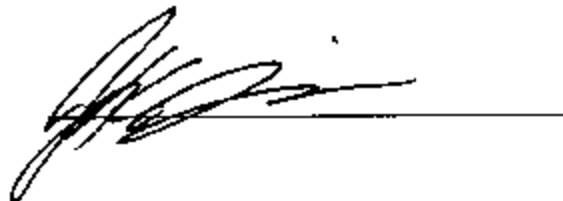
Configured for Left Side Impact

External Dimensions:	The dummy passed all external dimension requirements.
Lateral Head Drop Test:	The head passed all lateral drop test requirements.
Lateral Neck Test:	The neck passed all impact test requirements.
Lateral Thorax Impact Test:	The thorax passed all impact test requirements.
Thoracic Shock Absorber Test:	The thoracic shock absorber was not tested at this time.
Lumbar Flexion Test:	The dummy met the lumbar flexion test requirements.
Abdominal Compression Test:	The abdomen met the compression test requirements.
Pelvis Impact Test:	The lateral pelvis passed all impact test requirements.

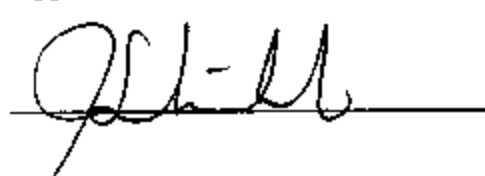
Transportation Research Center Inc.
572F SID Dummy
External Dimensions
Serial No. 028 Calibration No. 05

Test Parameter	Dimension	Specification	Results	Pass
Seated Height	SH	889.0 - 909.3 mm	895 mm	Yes
Rib Height	RH	501.7 - 520.7 mm	503 mm	Yes
Hip Pivot Height	HP	99.1 REF mm	99.1 mm	
Rib From Backline	RD	228.6 - 241.3 mm	231 mm	Yes
Knee Pivot From Backline	KH	510.5 - 525.8 mm	514 mm	Yes
Knee Pivot From Floor	KV	490.2 - 505.5 mm	499 mm	Yes
Hip Width	HW	355.6 - 391.2 mm	372 mm	Yes
Top Rib Width From C/L	RW-1	165.1 - 180.3 mm	171 mm	Yes
Bottom Rib Width From C/L	RW-2	165.1 - 180.3 mm	170 mm	Yes
Difference Between Top & Bottom Rib Width from C/L		≤ 2.5 mm	1.0 mm	Yes

Technician



Approved



TRE

TRANSPORTATION RESEARCH CENTER INC.

LATERAL HEAD DROP TEST

SID/HIII DUMMY

16-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO. HDL02805

572M SID/HIII SN028 HEAD CAL05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6 deg. C	22.22 deg. C
RELATIVE HUMIDITY	10 - 70 %	41.00 %
PEAK RESULTANT ACCELERATION	120 - 150 G	149.76 G
PEAK LONGITUDINAL ACCELERATION	15 G MAX	-9.66 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

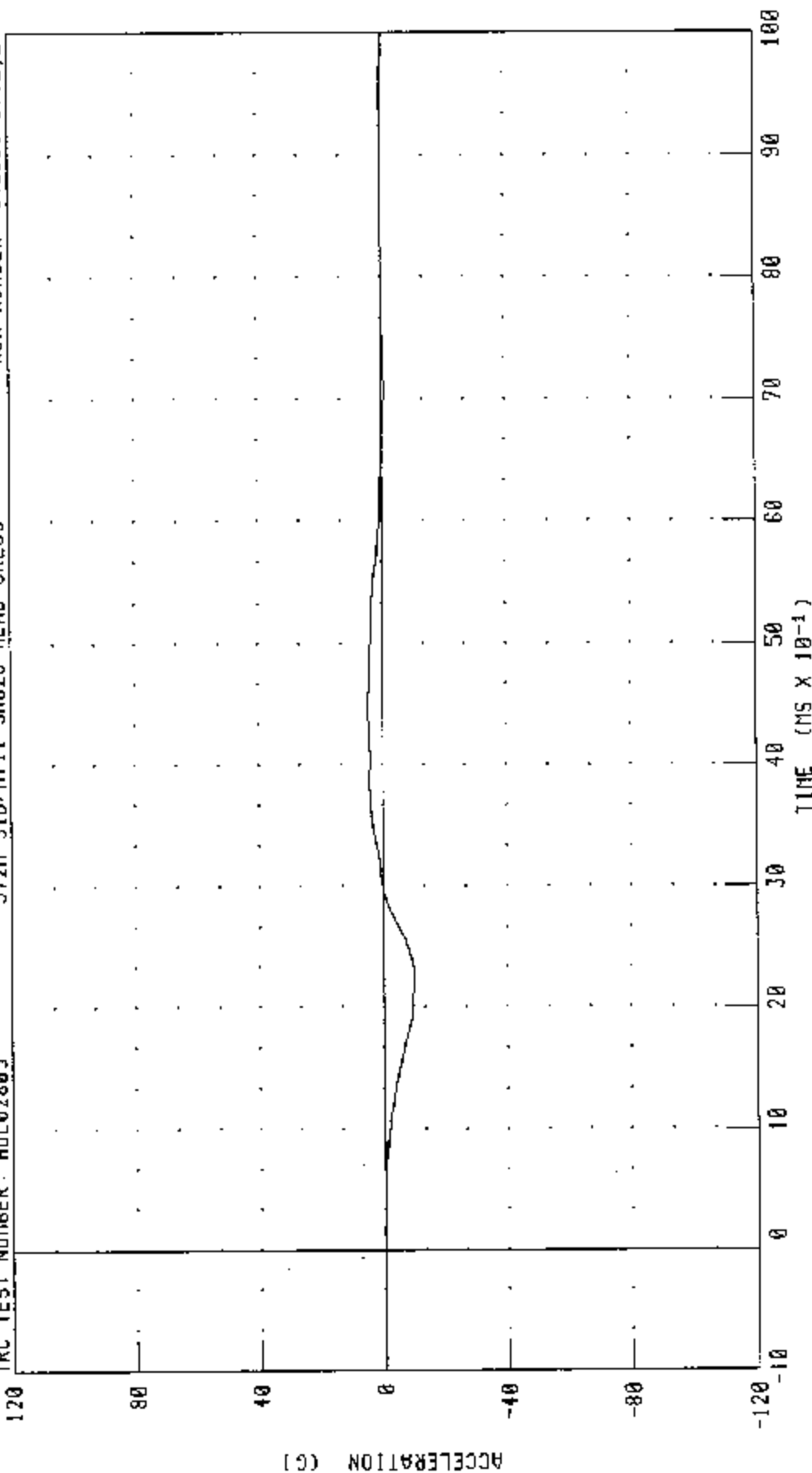
TECHNICIAN 

RUN NUMBER: 042803.0635;1

572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION X AXIS

TRC TEST NUMBER: HDL02805 572M SID/HIII SN028 HEAD CAL05 RUN NUMBER: 042803 0712,2



CHANNEL: HEDXG

FILTER: CH. CLASS 1000

TIME (MS X 10⁻¹)

PEAK DATA: 4.71 0 0 4.48 MS; -9.66 0 0 2.24 MS

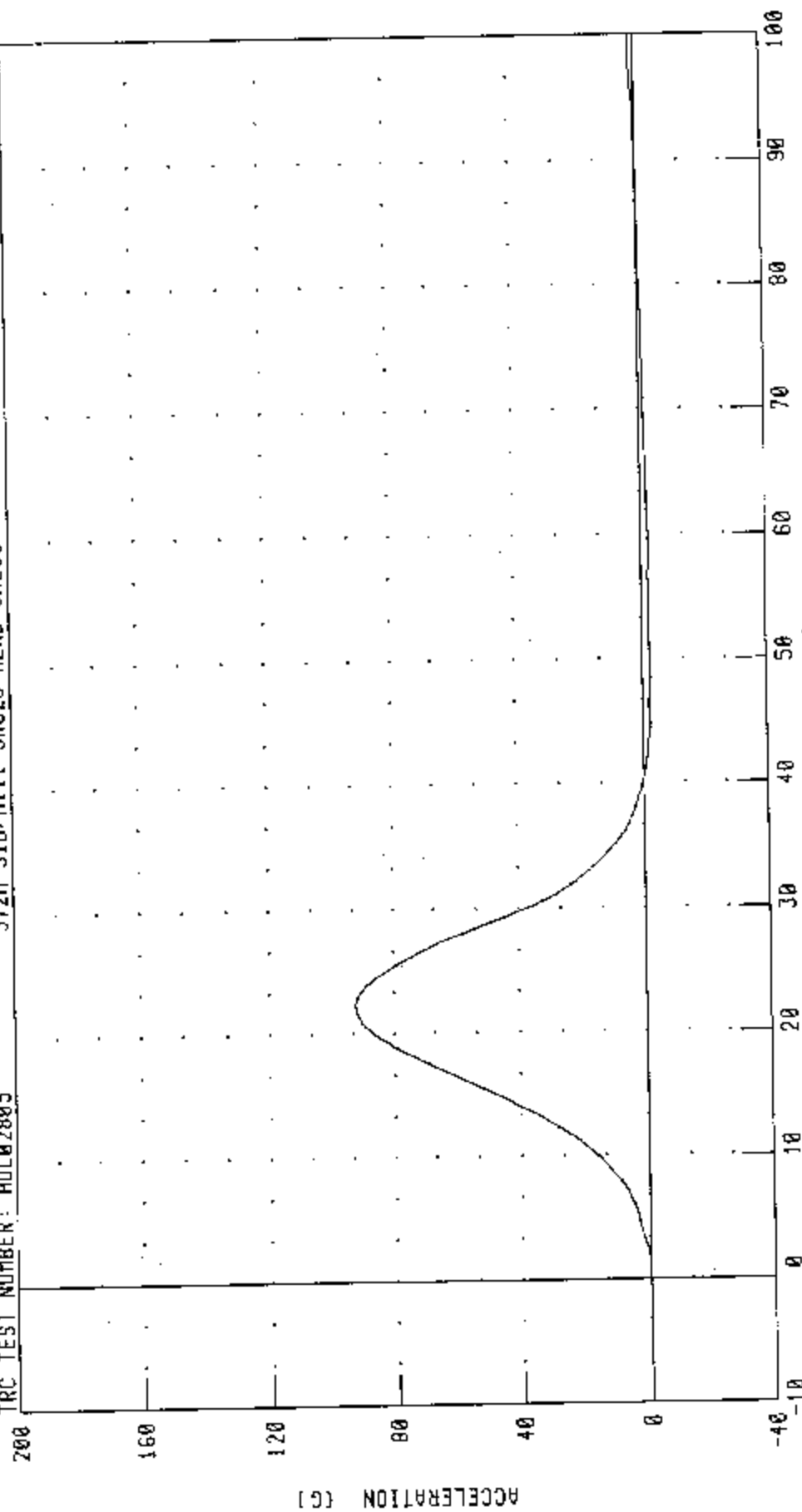
572H SID/HIII GUNNY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD ACCELERATION Y AXIS

RUN NUMBER: 042803.0712.2

572H SID/HIII SN028 HEAD CAL05

TRC TEST NUMBER: HDL02805



PEAK DATA 92.37 G @ 2.24 MS; -2.74 G @ 4.88 MS

CHANNEL: HD0YC FILTER: CH. CLASS 1800

572M SID/HILL DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

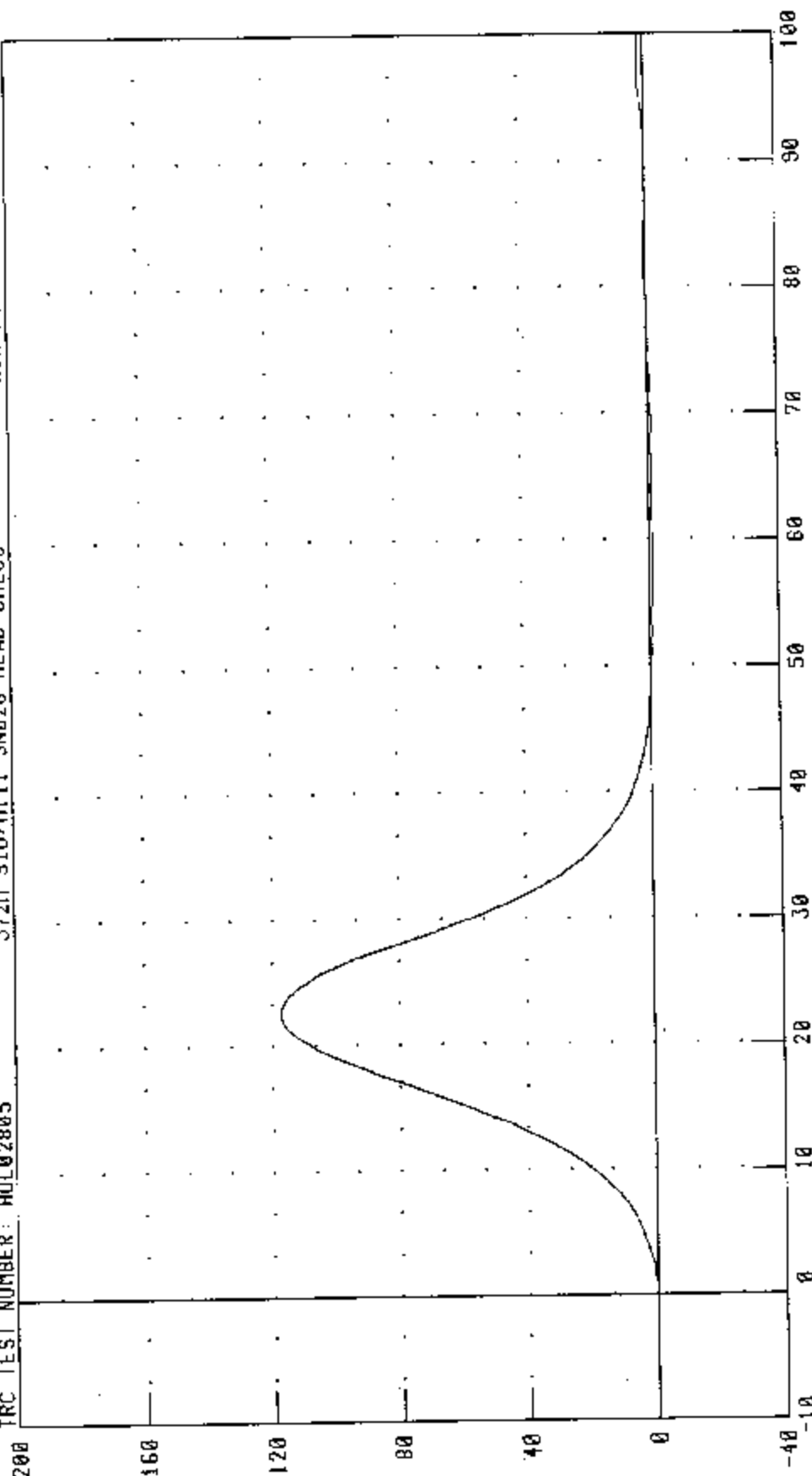
HEAD ACCELERATION Z AXIS

572M SID/HILL SN028 HEAD CAL05

TRC TEST NUMBER: HDL02805

572M SID/HILL SN028 HEAD CAL05

RUN NUMBER 042803.0712.2



TIME (MS X 10⁻¹)

PEAK DATA: 117.48 G @ 2.24 MS; -1.52 G @ 5.92 MS

CHANNEL HEDZC FILTER: CH. CLASS 1000

ACCELERATION (G)

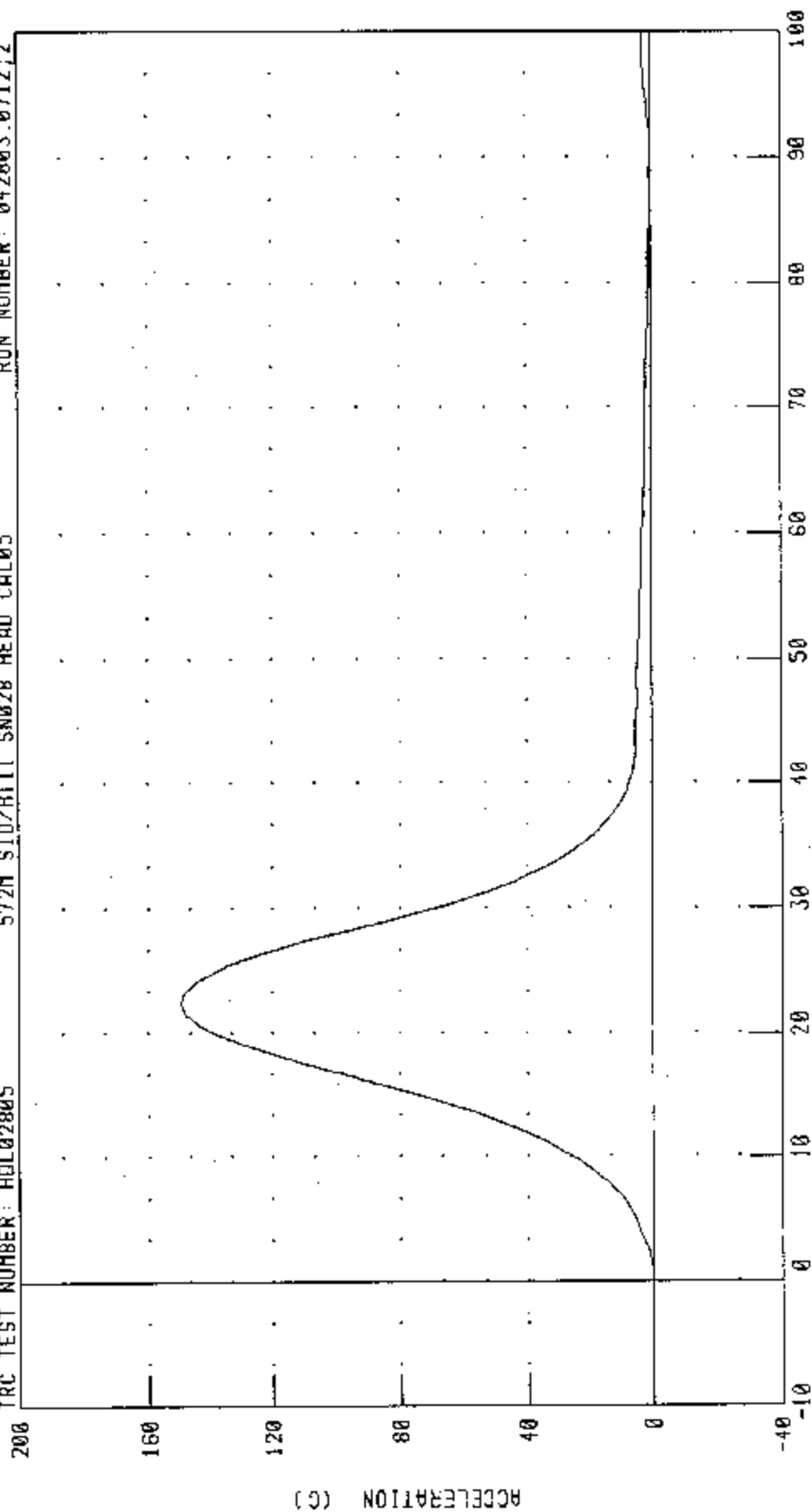
572M SID/HIII DUMMY CALIBRATION -- 35 DEGREE LEFT LATERAL HEAD DROP

HEAD RESULTANT ACCELERATION

TRC TEST NUMBER: H0102805

572M SID/HIII SN028 HEAD CAL05

RUN NUMBER: 042803.0712.2



CHANNEL: HEDRC FILTER: CH. CLASS 1000

PEAK DATA: 149.76 G @ 2.24 MS; 0.02 G @ -0.64 MS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL NECK TEST

HYBRIDIII SID DUMMY

17-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

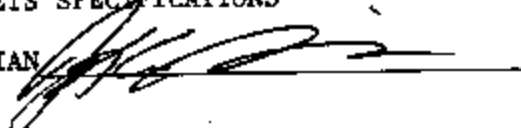
TEST NO. NFL02805

H3/SID SNO28 NECK LEFT CAL05

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6 - 22.2 deg. C	21.11 deg. C
RELATIVE HUMIDITY		10 - 70 %	41.00 %
IMPACT VELOCITY		6.89 - 7.13 M/S	6.99 M/S
INTEGRATED VELOCITY	10 MS	1.96 - 2.55 M/S	2.44 M/S
	20 MS	4.12 - 5.10 M/S	4.88 M/S
	30 MS	5.73 - 7.01 M/S	6.88 M/S
	40 - 70 MS	6.27 - 7.64 M/S	7.12- 7.18 M/S
MAXIMUM MIDSAGGITAL PLANE ROTATION		66 - 82 deg.	71.05 deg.
ROTATION ANGLE DECAY TIME FROM PEAK TO ZERO		58 - 67 MS	61.20 MS
MAXIMUM MOMENT ABOUT OCCIPITAL CONDYLE		73 - 88 NM	78.66 NM
POSITIVE MOMENT DECAY TIME FROM PEAK TO ZERO		49 - 64 MS	54.24 MS
TIME OF MAXIMUM ROTATION AFTER MAXIMUM MOMENT		2 - 16 MS	8.32 MS

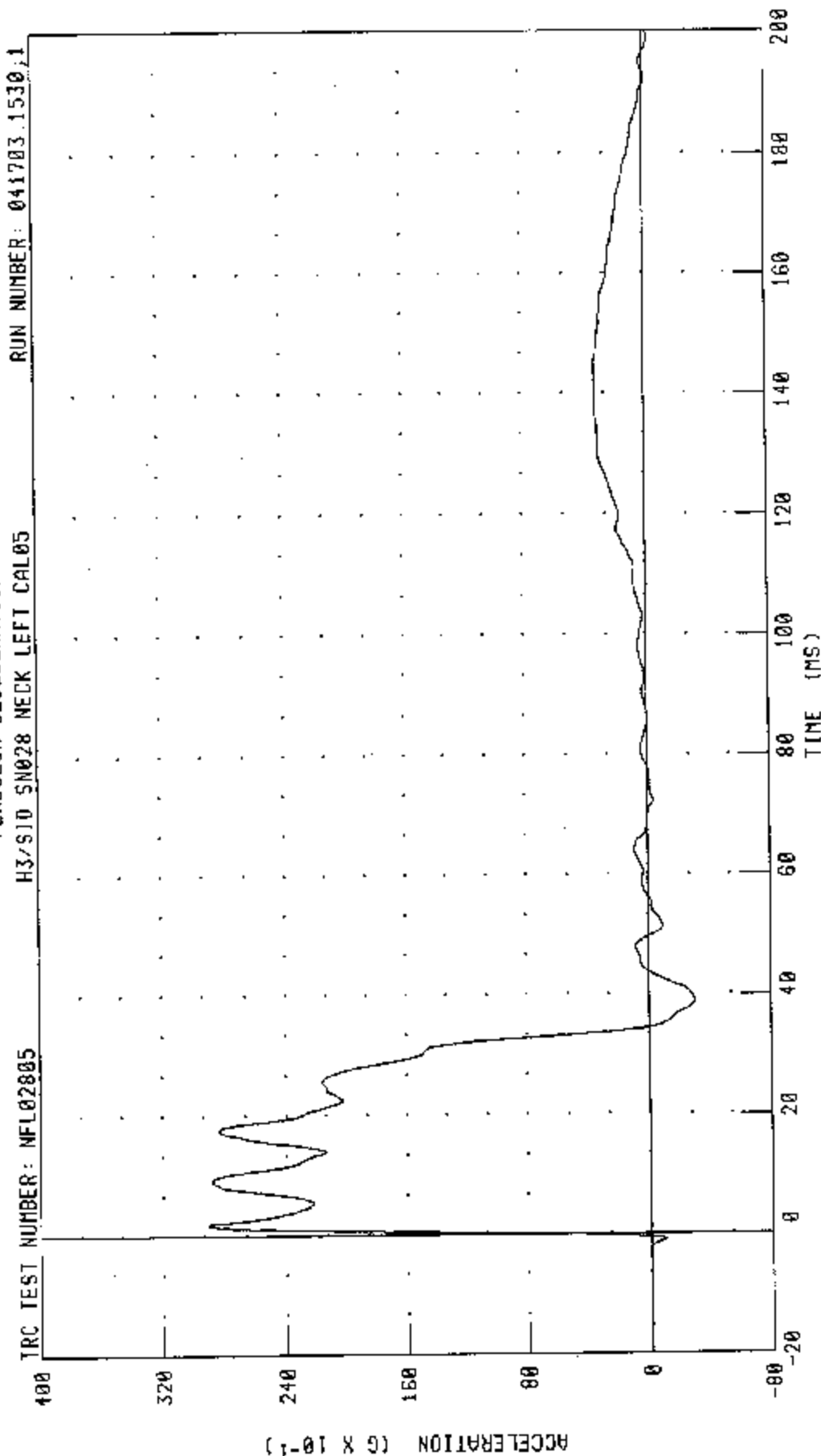
TEST MEETS SPECIFICATIONS

TECHNICIAN



RUN NUMBER: 041703.1527;1

H3/SID DUNNY CALIBRATION -- LEFT LATERAL NECK TEST PENDULUM DECELERATION



CHANNEL: PENXC FILTER: CH. CLASS 180

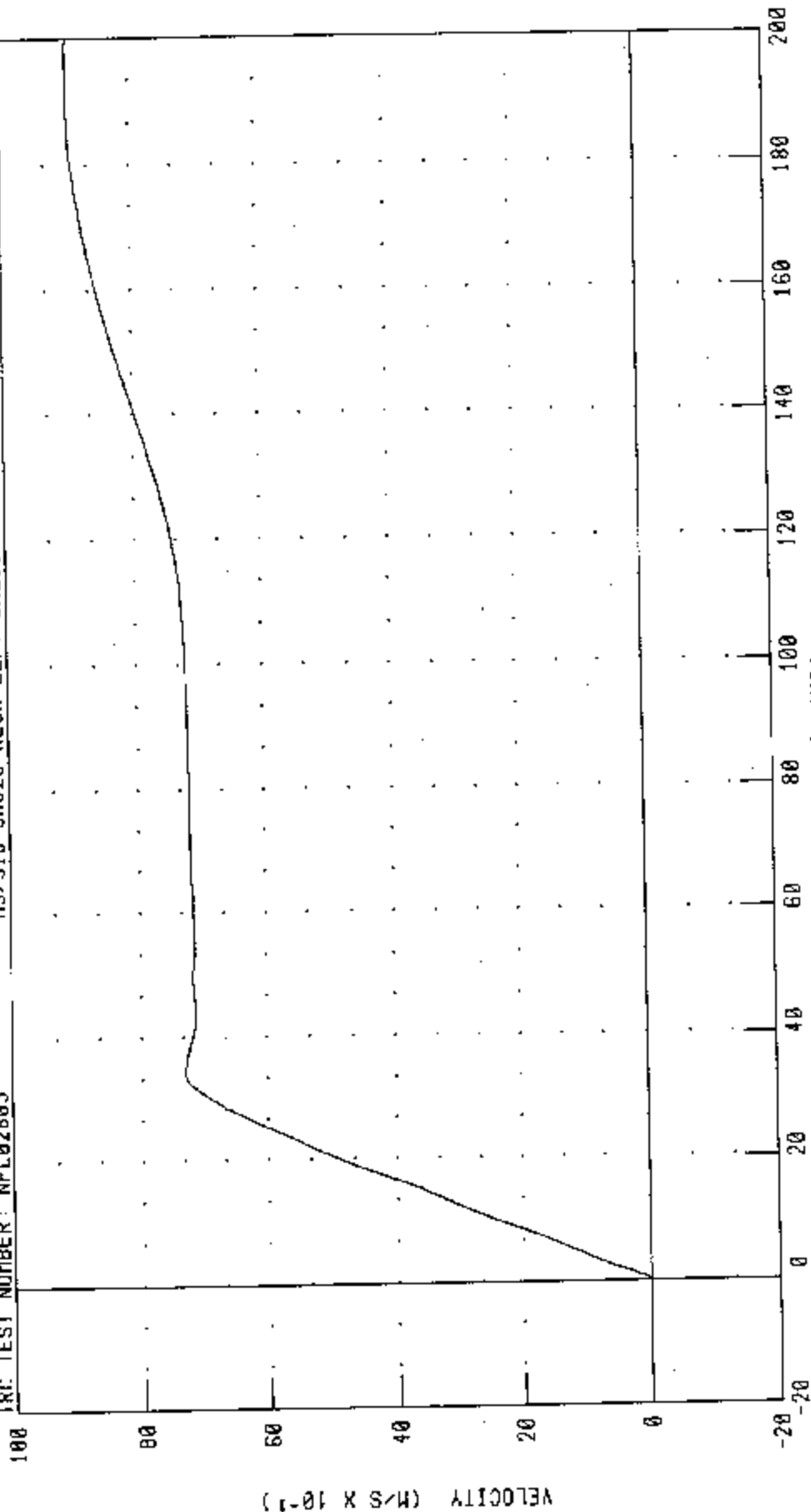
H3/S10 DUMPSY CALIBRATION -- LEFT LATERAL NECK TEST

INTEGRATED PENDULUM VELOCITY

H3/S10 SN028 NECK LEFT CAL05

RUN NUMBER: 041703.1530.1

TRC TEST NUMBER: NFL02805



PEAK DATA: 8.99 M/S @ 196.88 MS; -0.81 M/S @ -0.56 MS

CHANNEL PENXVT FILTER: CH. CLASS 180

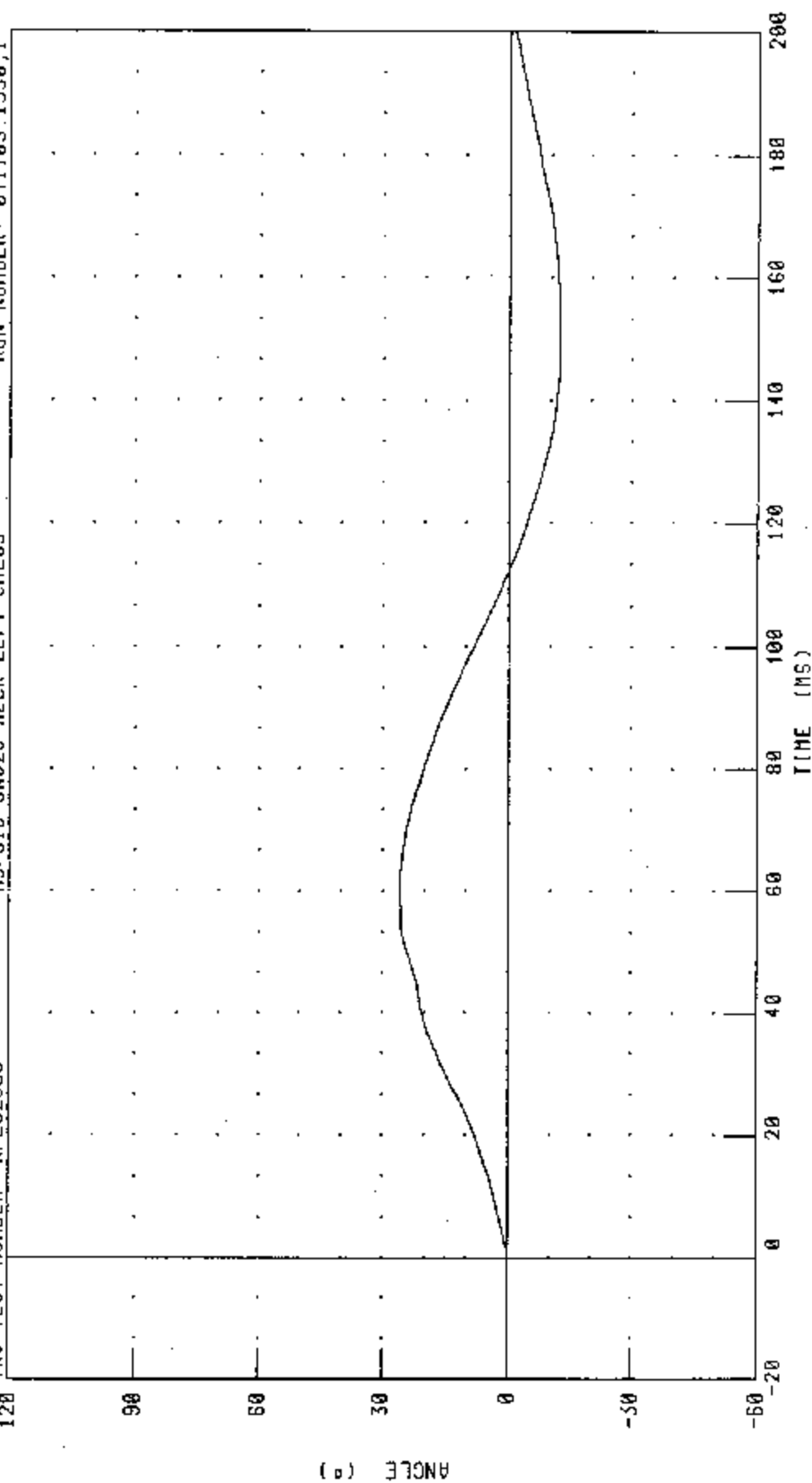
H3/SIO DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

ROTATION ABOUT BASE OF NECK

TRC TEST NUMBER: NFL02805

H3/SIO SN028 NECK LEFT CAL05

RUN NUMBER: 041703.1530.1



PEAK DATA: 25.85 ° @ 61.20 MS; -12.35 ° @ 150.80 MS

CHANNEL BETA FILTER: CH. CLASS G0

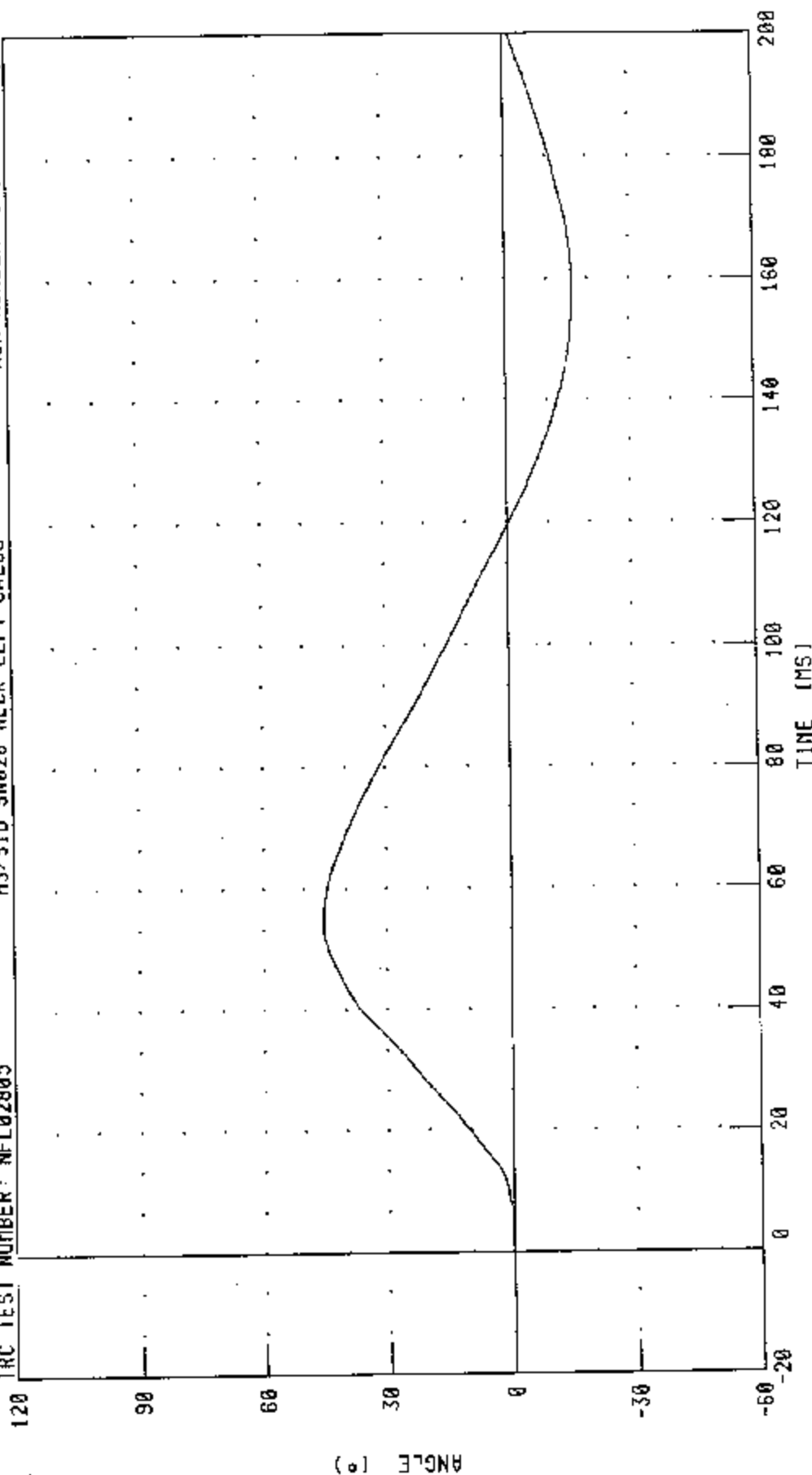
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NFCK TEST

ROTATION ABOUT OCCIPITAL CONDYLE

H3/SID SN020 NECK LEFT CAL05

TAC TEST NUMBER: NFL02805

RUN NUMBER: 041703.1530;1



PEAK DATA: 45 47 ° @ 54.48 MS; -16.40 ° @ 157 52 MS

CHANNEL: THETA FILTER: CH. CLASS 60

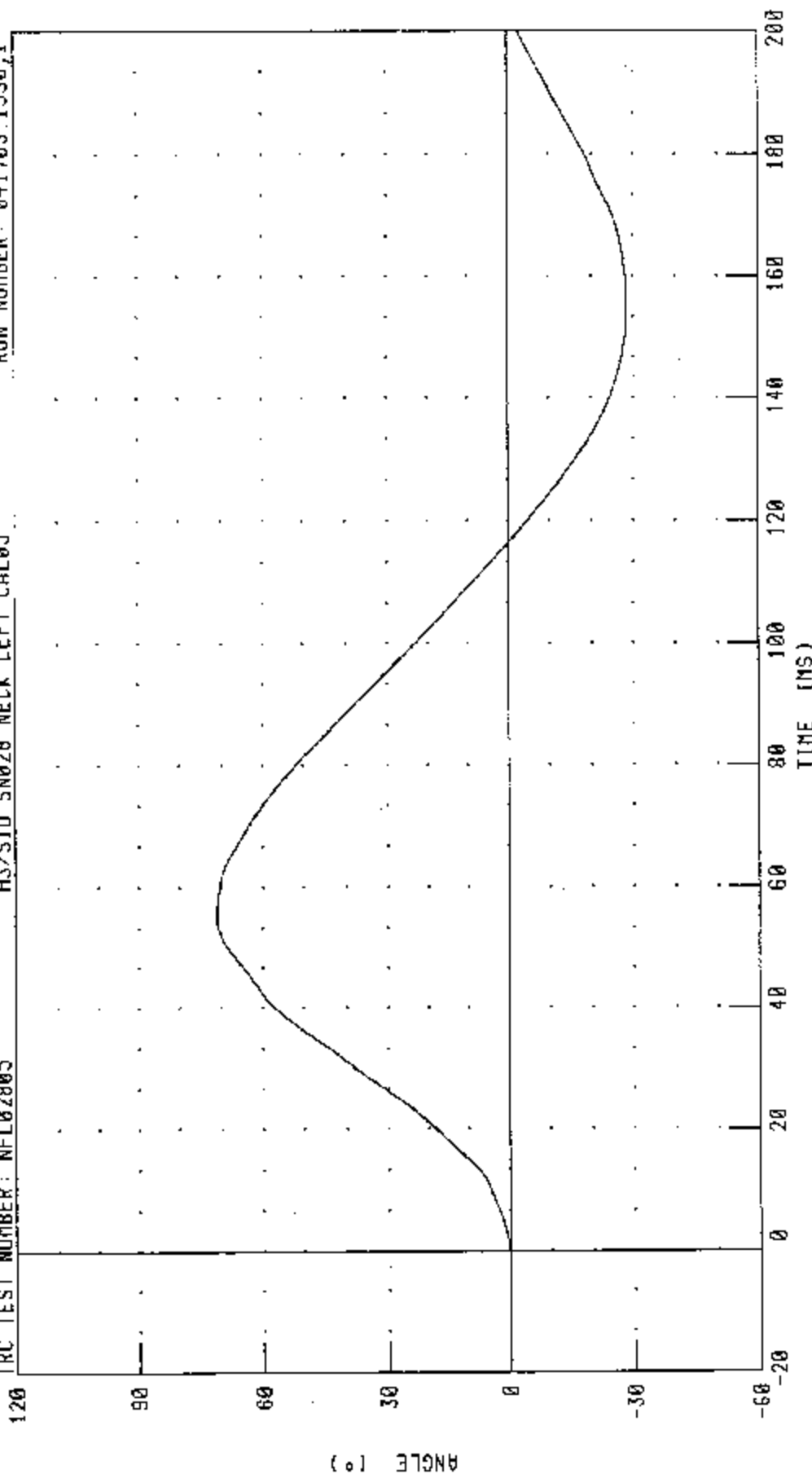
H3/S10 DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

TOTAL ROTATION

TRC TEST NUMBER: NFL02805

H3/S10 SN028 NECK LEFT CAL05

RUN NUMBER: 041703.1530.1



CHANNEL: TOTAL FILTER: CH. CLASS 60

PEAK DATA: 71.05 ° @ 55.20 MS, -28.55 ° @ 154.72 MS

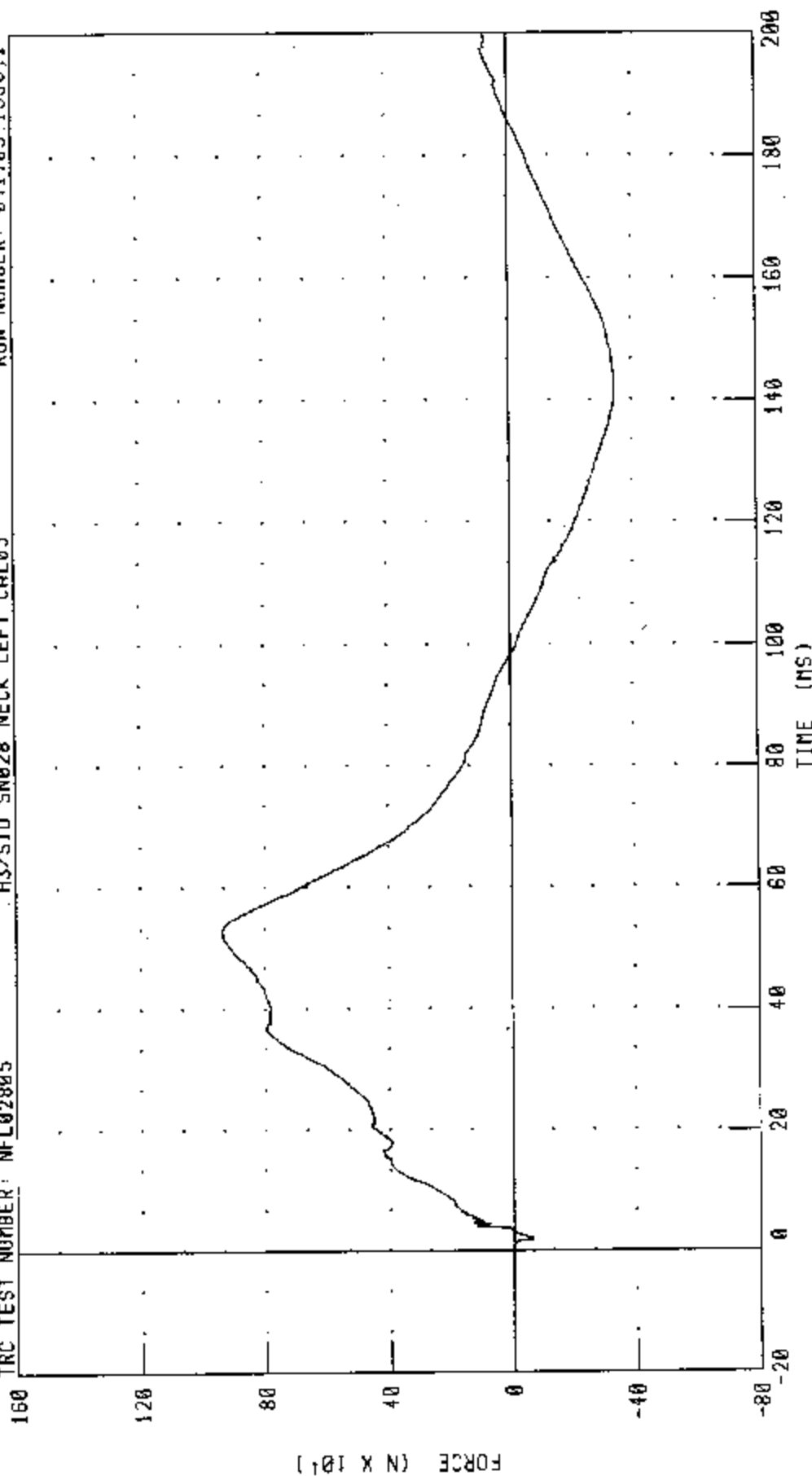
H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK FORCE Y AXIS

TRC TEST NUMBER: NFL02805

H3/SID SN028 NECK LEFT CAL05

RUN NUMBER: 041703.1530.1



CHANNEL NEKYF FILTER: CH. CLASS 1000

PEAK DATA: 937.92 N @ 52.88 MS; -344.45 N @ 141.36 MS

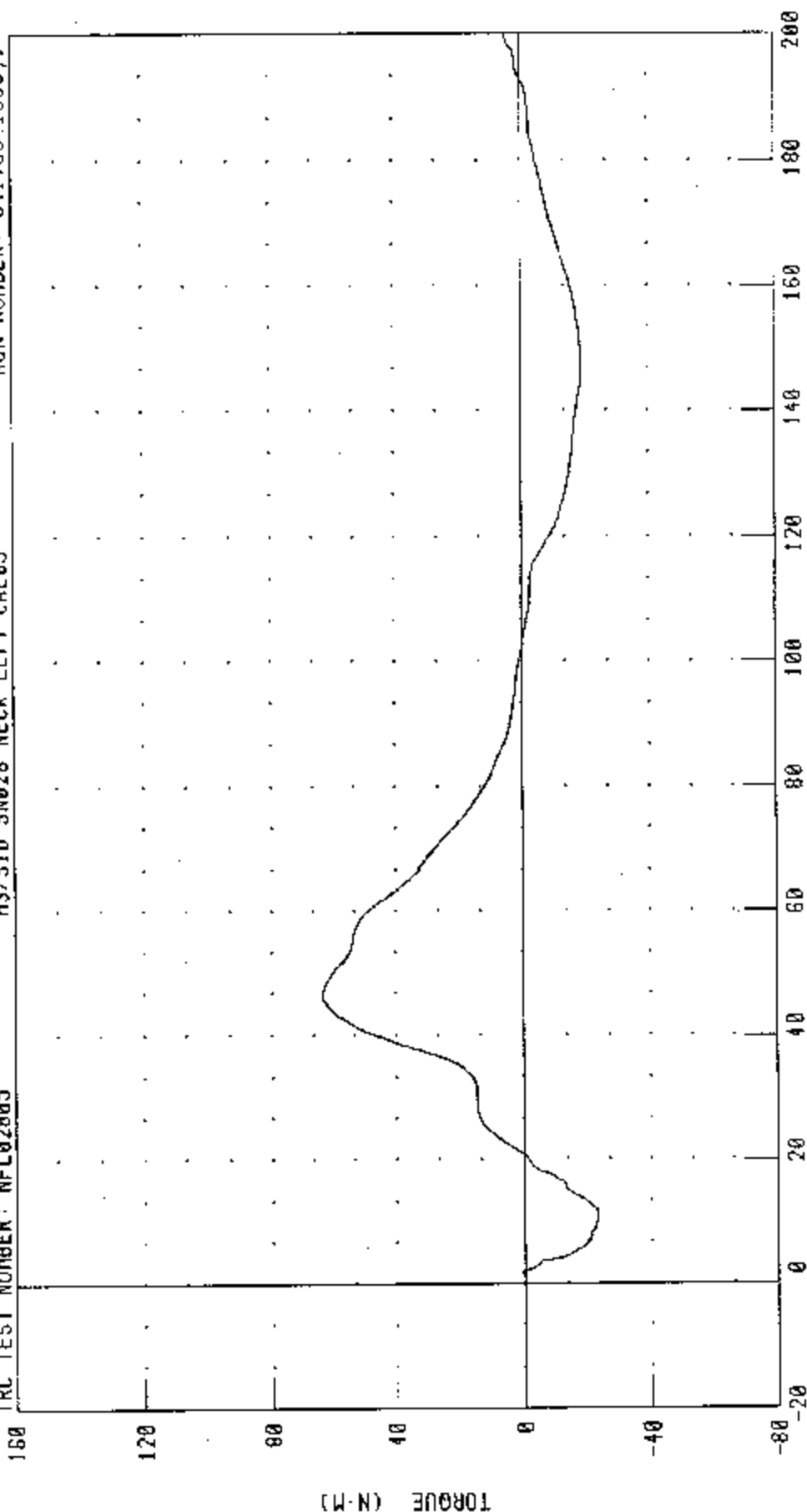
H3/S10 DUMMY CALIBRATION -- LEFT LATERAL NECK TEST

NECK MOMENT X AXIS

TRC TEST NUMBER: NFL02805

H3/S10 SN028 NECK LEFT CAL05

RUN NUMBER: 041703.1530.1

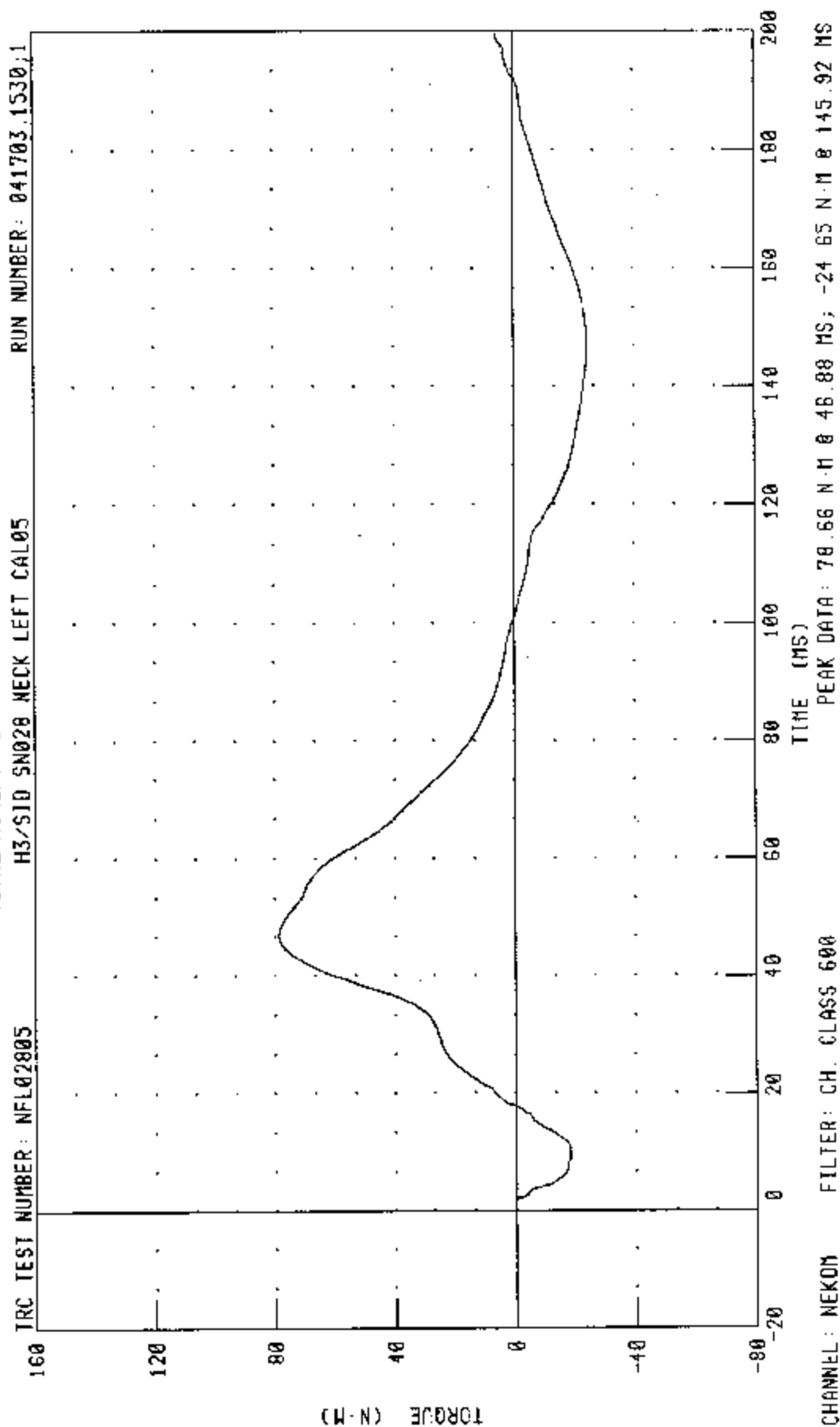


TIME (MS)

PEAK DATA: 63.59 N-M @ 46.64 MS, -22.90 N-M @ 10.80 MS

CHANNEL: NEKXM FILTER: CH. CLASS 600

H3/SID DUMMY CALIBRATION -- LEFT LATERAL NECK TEST
TOTAL MOMENT ABOUT OCCIPITAL CONDYLE



TORQUE (N-M)

C-120

030415

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY

16-APR-03

LEFT SIDE CONFIGURATION

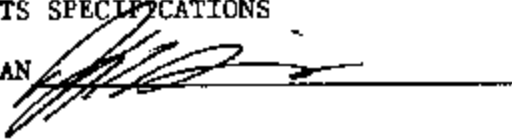
TRC INC.

TEST NO: STL02805

572F SID SN028 L.THORAX CAL05

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	40.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.30 M/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	39.1 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	40.4 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	18.2 G

TEST MEETS SPECIFICATIONS

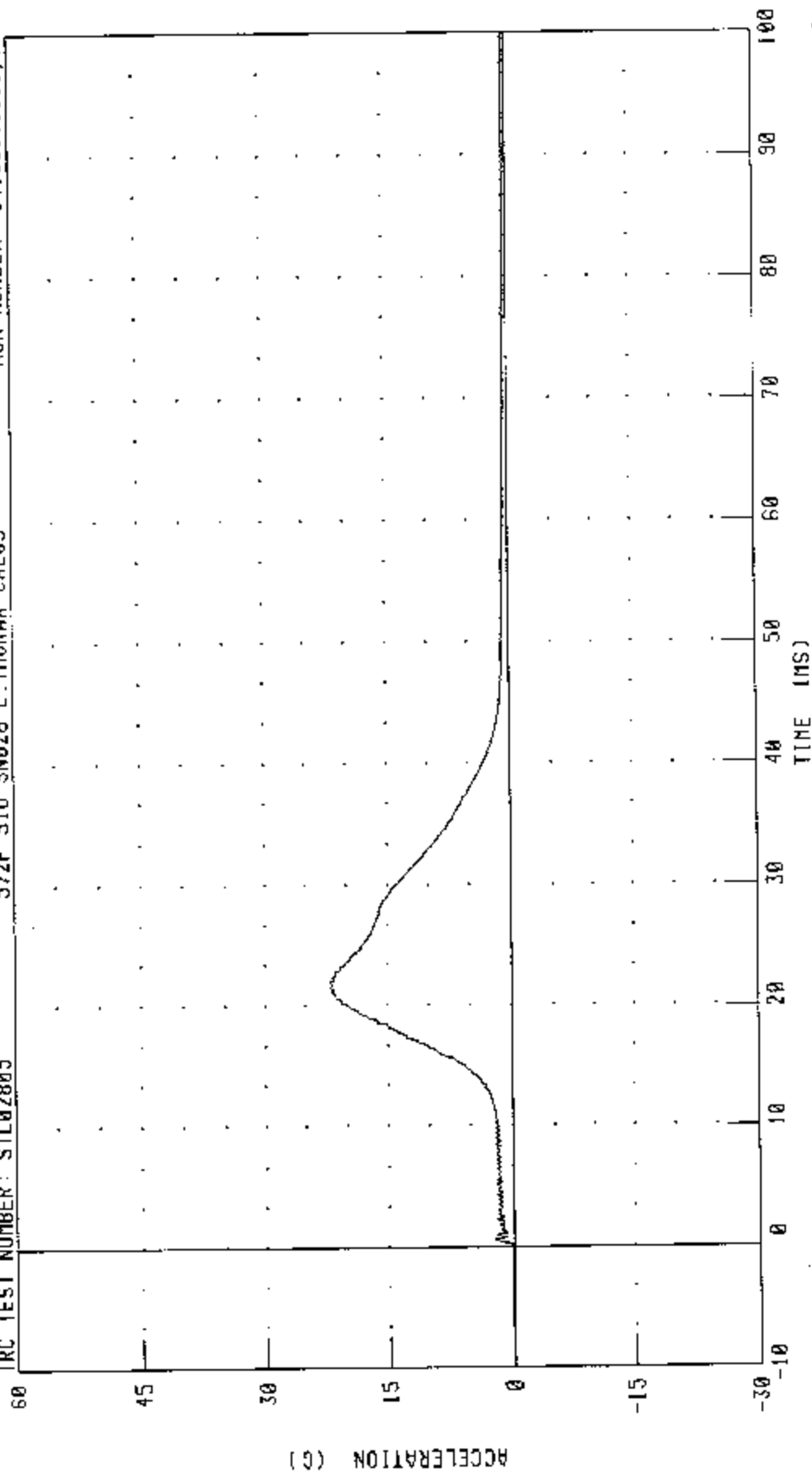
TECHNICIAN 

RUN NUMBER: 041603.1019;1

PART 572-F S I D THORAX CALIBRATION - (LEFT SIDE IMPACT)

PENDULUM DECELERATION

TRC TEST NUMBER: STL02805 572F SID SN028 L THORAX CAL05 RUN NUMBER: 041003.1019,1



PEAK DATA: 21.99 G @ 21.52 MS, -0.01 G @ -8.56 MS

CHANNEL: PENXC FILIER: CH. CLASS 1000

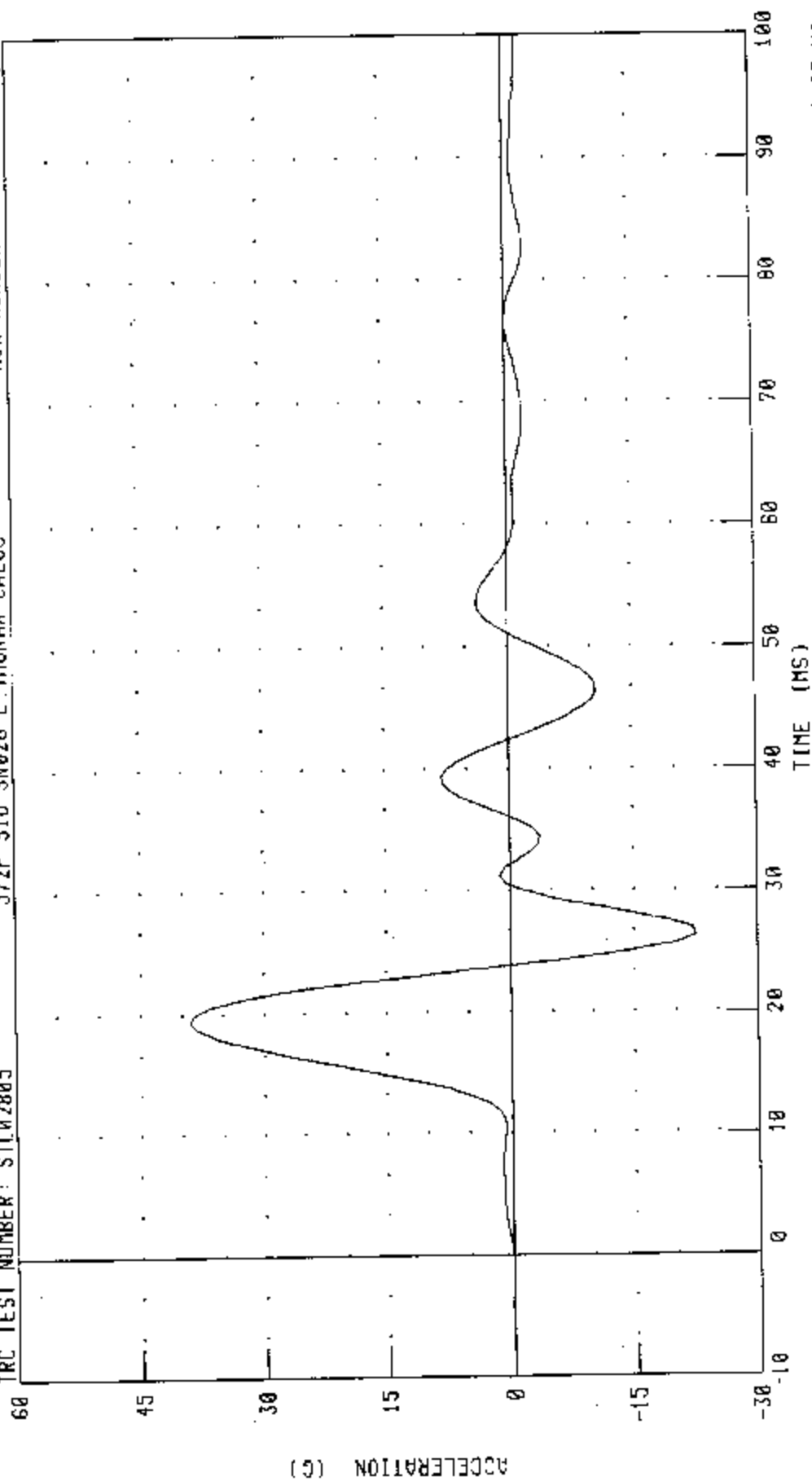
PART 572-F S.I.0 THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT UPPER RIB ACCELERATION Y AXIS

RUN NUMBER: 041603.1019.1

572F SID SN028 L THORAX CAL05

TRC TEST NUMBER: STL02805



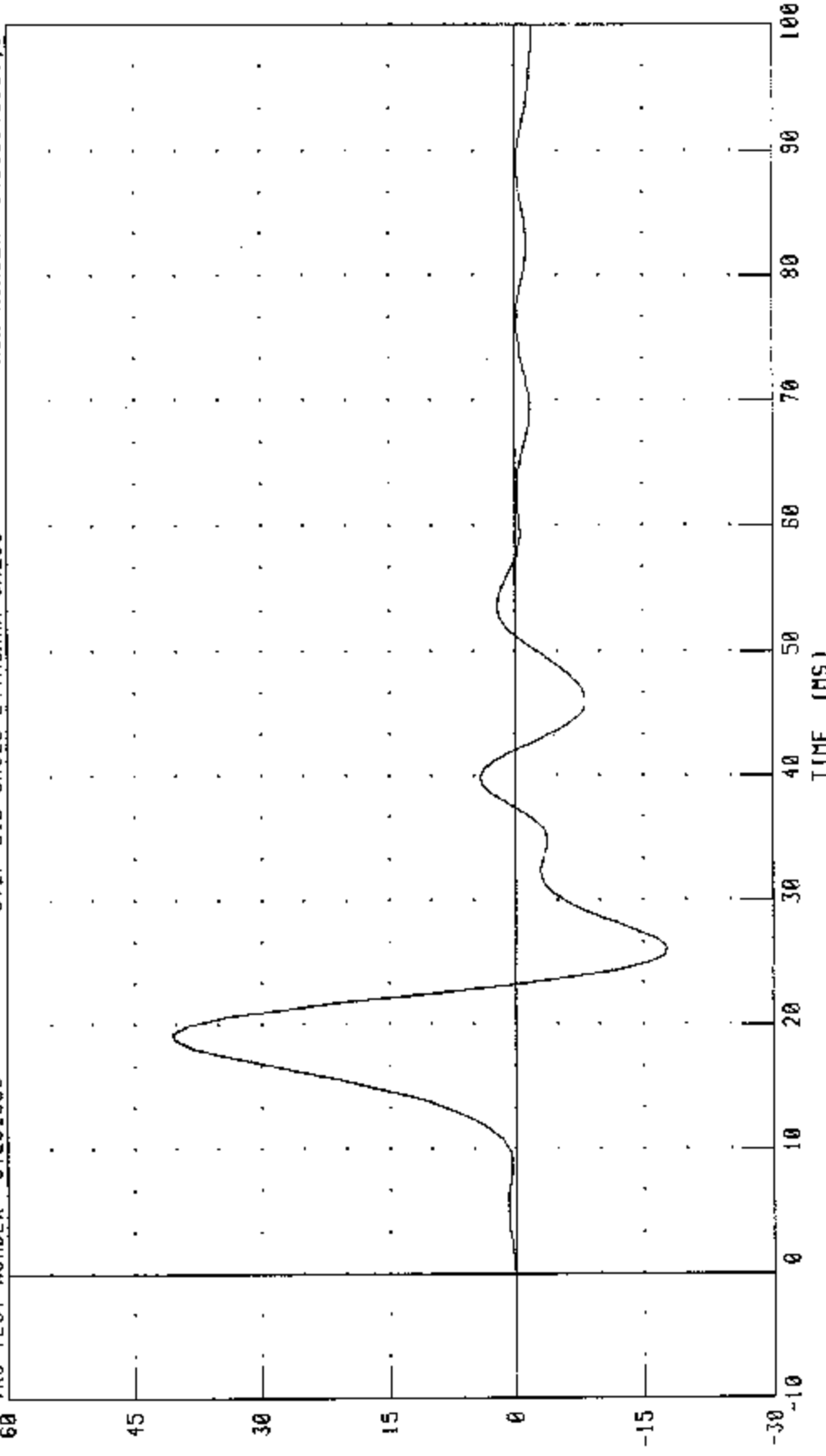
PEAK DATA: 39.12 G @ 19.38 MS; -22.49 G @ 26.25 MS

CHANNEL: LURYC FILTER: FIR 100

PART 572-F S.I.D THORAX CALIBRATION - (LEFT SIDE IMPACT)

LEFT LOWER RIB ACCELERATION Y AXIS

TRC TEST NUMBER: STL02805 572F SID SN028 L THORAX CAL05 RUN NUMBER: 041603.1019.1



CHANNEL: LLRYC FILTER: FIR 100 PEAK DATA: 40.40 G @ 19.38 MS; -17.77 G @ 26.25 MS

ACCELERATION (G)

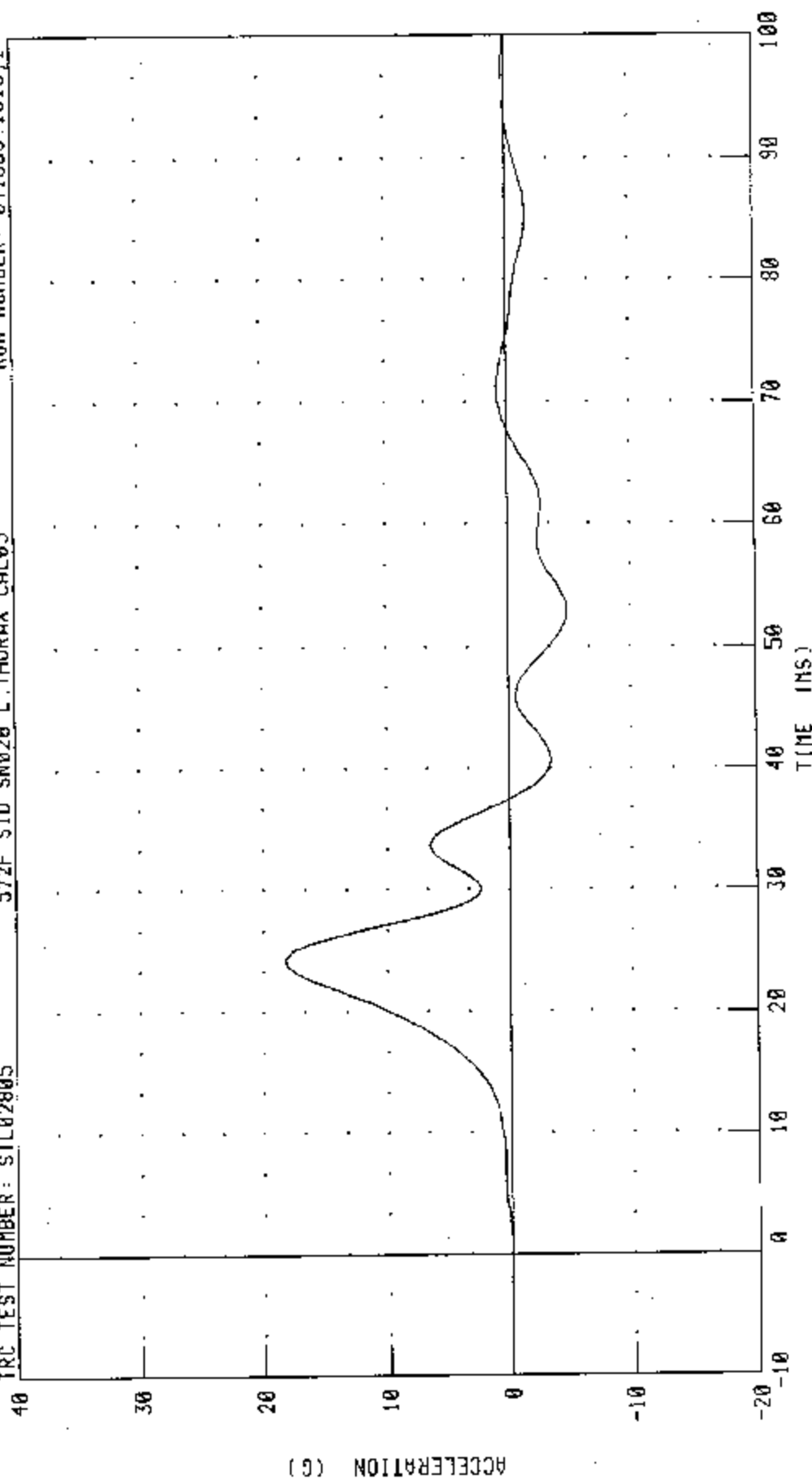
PART 572-F G.I.D. THORAX CALIBRATION - (LEFT SIDE IMPACT)

LOWER SPINE ACCELERATION Y AXIS

572F SID SNB28 L THORAX CAL05

TRC TEST NUMBER: STL02805

RUN NUMBER: 041603.1019.1



PEAK DATA: 18.25 G @ 24.38 MS; 4.87 G @ 53.12 MS

CHANNEL: T12YC FILTER: FIR 100

TRANSPORTATION RESEARCH CENTER INC.

LUMBAR FLEXION TEST

SID PART 572B

CAL DATE: 16-Apr-03

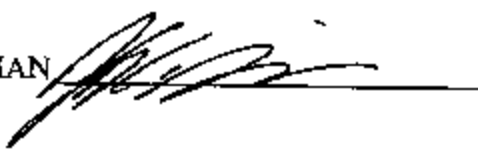
TRC, INC.

TEST NO: 028C05LF1

572B SN 028 TORSO FLEX CAL 05

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	18.9 - 25.6° C	21.9 °C
RELATIVE HUMIDITY	10 - 70 %	39 %
FORCE AT 0 DEG. FLEXION	-27 - 27 N	0 N
FORCE AT 20 DEG OF FLEXION	98 - 151 N	115.7 N
FORCE AT 30 DEG OF FLEXION	151 - 205 N	177.9 N
FORCE AT 40 DEG OF FLEXION	205 - 258 N	213.5 N
NET RETURN ANGLE AFTER 3 MINUTES	< 12 °	6.0 °

TEST MEETS SPECIFICATIONS

TECHNICIAN 

Transportation Research Center Inc.

572B Abdomen Compression Test

HIH SID Serial No. 028 Calibration No. 05 - 1

Test Date 04/16/2003

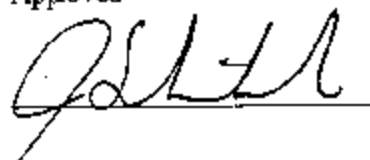
Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	22.2 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Displacement Rate	6.35 - 8.89 mm/s	7.0 - 8.1 mm/s	Yes
Data Within Required Corridor	Yes	Yes	Yes

Comments:

Technician



Approved



04.18.2003 09:12:04 98

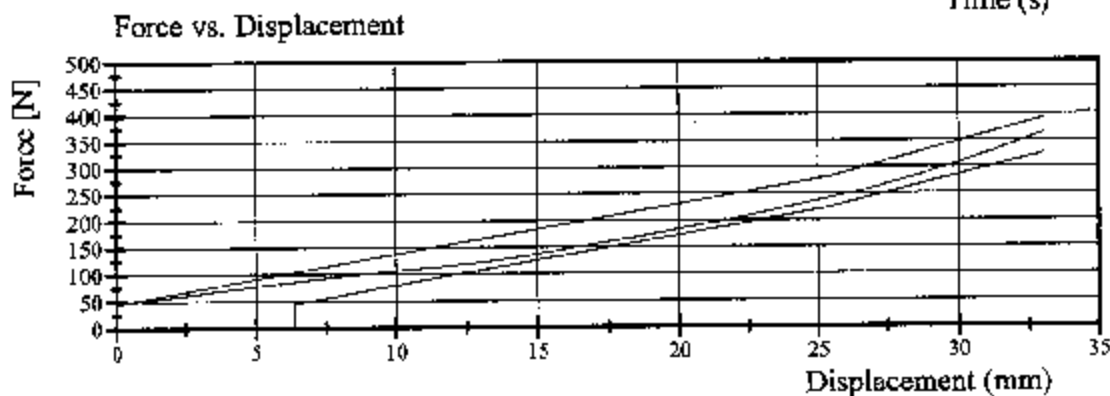
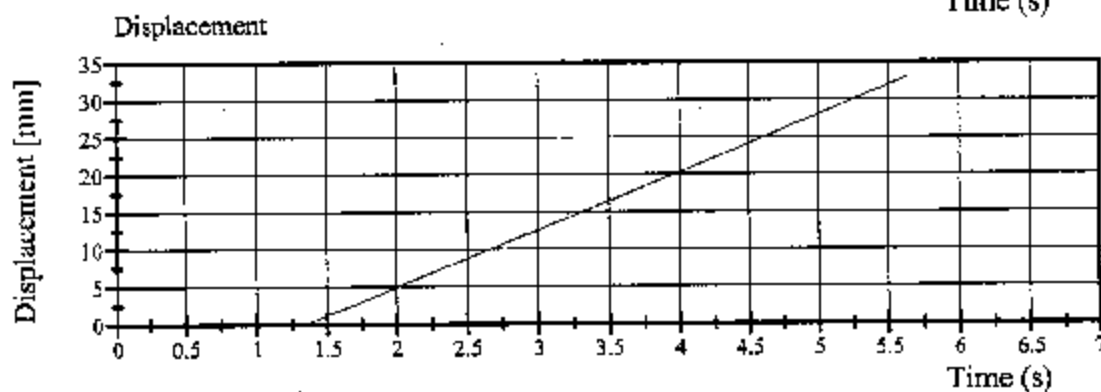
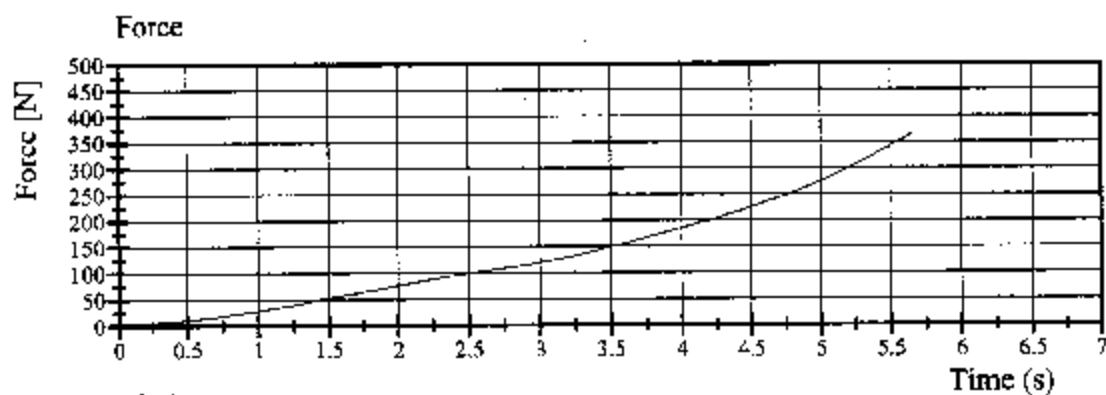


Transportation Research Center Inc.

572B Abdomen Compression Test

HIH SID Serial No. 028 Calibration No. 05 - 1

Test Date 04/16/2003



04.18.2003 09:12:05 98



TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY

16-APR-03

LEFT SIDE CONFIGURATION

TRC INC.

TEST NO: SPL02805

572F SNO28 LEFT PELVIS CAL05

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	18.9 - 25.5 C	22.2 DEG. C
RELATIVE HUMIDITY	10 - 70 %	41.0 %
PENDULUM VELOCITY	4.21 - 4.33 M/S	4.30 M/S
PEAK PELVIC ACCELERATION	40 - 60 G	48.4 G
TIME ABOVE 20 G LEVEL	3 - 7 MS	6.2 MS
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN 

RUN NUMBER: 041603.1024;1

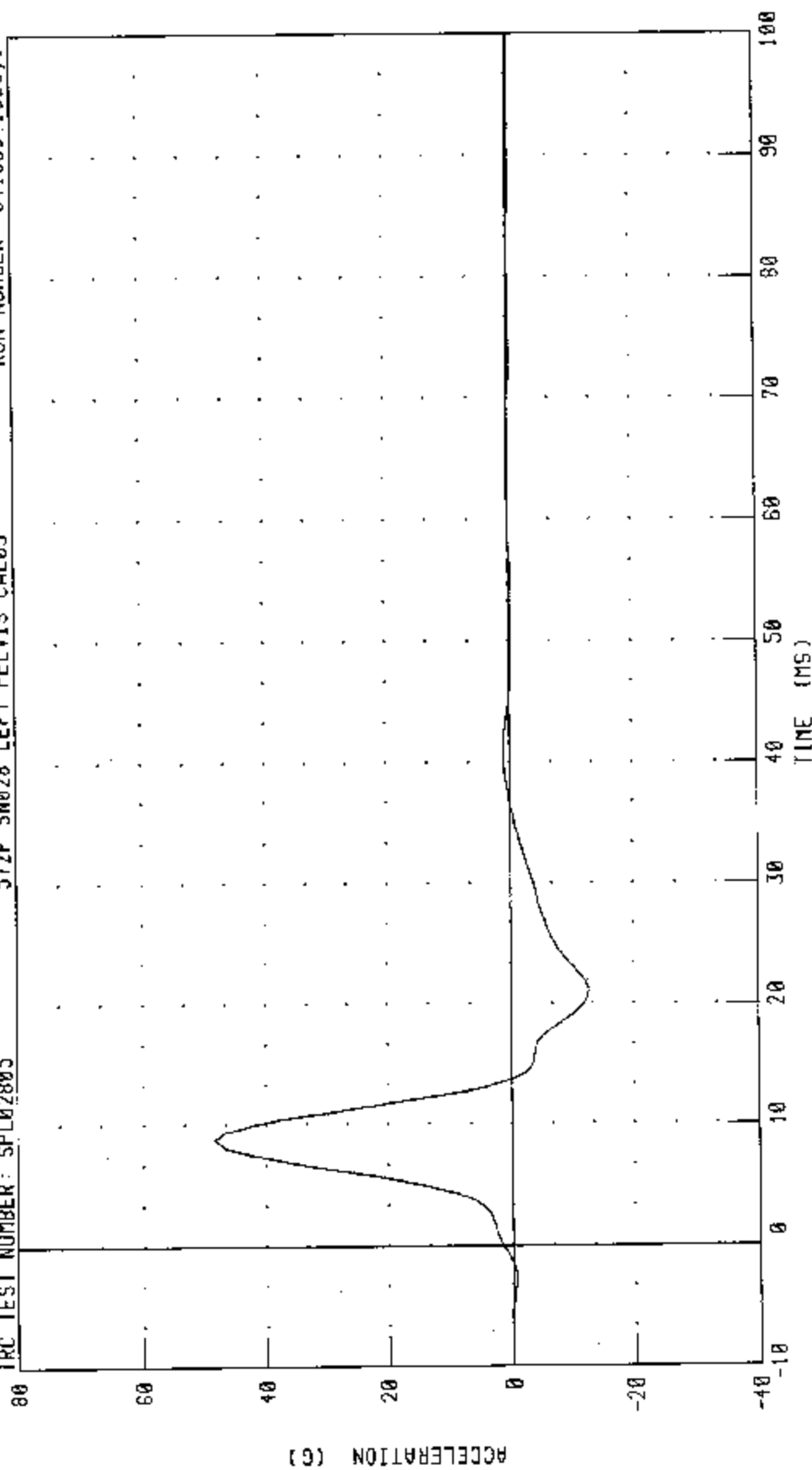
PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)

PELVIS ACCELERATION Y AXIS

572F SN028 LEFT PELVIS CAL05

RUN NUMBER: 041603.1025;1

TRC TEST NUMBER: SPL02805

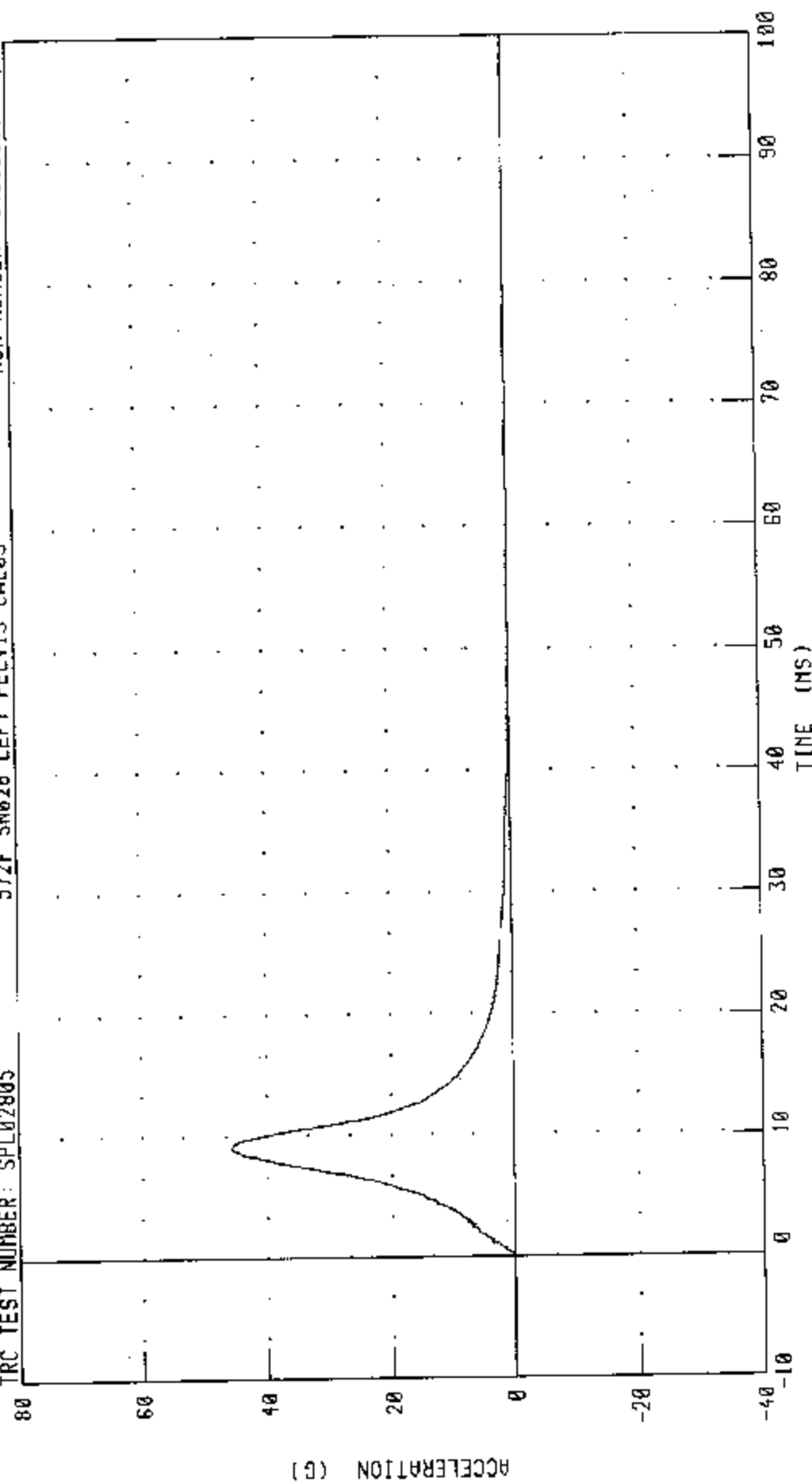


CHANNEL: PEVYG FILTER: FIR 100

PEAK DATA: 48.40 G @ 75 MS; -12.52 G @ 25 MS

PART 572-F S.I.D. PELVIS CALIBRATION - (LEFT SIDE IMPACT)
 PENDULUM DECELERATION

TRC TEST NUMBER: SPL02805 572F SN028 LEFT PELVIS CAL05 RUN NUMBER: 041603.1025;1



CHANNEL: PENXC FILTER: CH. CLASS 1000 PEAK DATA: 45.71 G @ 9.84 MS; -0.08 G @ 51.44 MS

Transportation Research Center Inc.

SID Pre-Use Inspection

Type: SID-HIII S/N: 065 Mfr: Denton Test Date: 04/15/03Proj./Seg. No.: 20020455-1130 Test Eng.: Ginny Watters

ITEM	PRE-USE	
HEAD:		
Head Ballast Condition	X	
Accel. Mount Bolts and Cables	X	
Skull Cap Bolts	X	
Head Skin Condition	X	
Accel. Cable Exit (left or right)	(Left)	(Right) N/A
NECK:		
Rubber Condition and Separation From End Caps	X	
THORAX: Left Side Configuration		
Stacked Shoulder Foams and Bolts	X	
* Rib Cage Spring and Support Assembly	X	
* Rib Cage Bolts	X	
* Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	
* Location and Adjustment of Chest Pot Bracket and Collars	X	
* Chest Pot Rod End Nuts and Eyebolt	X	
Arm Foam Orientation	X	
Thorax/Lumbar Spine Bolts	X	
PELVIS:		
Tightness and Alignment of H-Point Tool Insert	X	
* Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
Check Spine Kits (Yellow tape = Kits/No tape = No kits)	(With) X	(Without)
LEGS AND FEET:		
Femur Load Cell Bolts (40 ft/lbs)	X	
Breakaway Femur Bolts (5-6 ft/lbs)	X	
Knee Joint Function and Range of Motion	X	
Leg Skin Condition and Position	X	
Ankle Range of Motion	X	
Foot Condition	X	
OTHER:		
Cleanliness	X	
Target Position	X	
Clothes	X	
Shoes	X	
Knee & Ankle One G Joint Adjustments	X	

Inspection Completed By: J. Clarridge Date: 04/14/03

Transportation Research Center Inc.

SID Pre-Use Inspection

Type: SID-HIII S/N: 028Mfr: VectorTest Date: 04/15/03Proj./Seg. No.: 20020455-1130Test Eng.: Ginny Watters

ITEM	PRE-USE	
HEAD:		
Head Ballast Condition	X	
Accel. Mount Bolts and Cables	X	
Skull Cap Bolts	X	
Head Skin Condition	X	
Accel. Cable Exit (left or right)	(Left)	(Right) N/A
NECK:		
Rubber Condition and Separation From End Caps	X	
THORAX: Left Side Configuration		
Stacked Shoulder Foams and Bolts	X	
* Rib Cage Spring and Support Assembly	X	
* Rib Cage Bolts	X	
* Damper Rear Attachment Ring, Pivot Pins, and Bracket	X	
* Location and Adjustment of Chest Pot Bracket and Collars	X	
* Chest Pot Rod End Nuts and Eyebolt	X	
Arm Foam Orientation	X	
Thorax/Lumbar Spine Bolts	X	
PELVIS:		
Tightness and Alignment of H-Point Tool Insert	X	
* Hips Range of Motion and 1-2g Adjustment (before calibration only)	X	
Upper Femur Bolt Adjustment and Position	X	
Check Spine Kits (Yellow tape = Kits/No tape = No kits)	(With) X	(Without)
LEGS AND FEET:		
Femur Load Cell Bolts (40 ft/lbs)	X	
Breakaway Femur Bolts (5-6 ft/lbs)	X	
Knee Joint Function and Range of Motion	X	
Leg Skin Condition and Position	X	
Ankle Range of Motion	X	
Foot Condition	X	
OTHER:		
Cleanliness	X	
Target Position	X	
Clothes	X	
Shoes	X	
Knee & Ankle One G Joint Adjustments	X	

Inspection Completed By: J. ClarridgeDate: 04/14/03

Transportation Research Center Inc.

SID Post-Use Inspection

Type: SID-HIII S/N: 065 Mfr: Denton Test Date: 04/15/03

Proj./Seg. No.: 20020455-1130 Test Eng.: Ginny Watters

ITEM	POST-USE
HEAD:	
Head Skin Condition	X
Head Ballast Condition	X
NECK:	
Rubber Condition and Separation From End Caps	X
THORAX: Left Side Configuration	
Jacket Condition	X
Arm Foam Condition	X
Damper and Chest Pot Movement and Condition	X
Rib Cage Spring and Support Assembly Condition	X
Rib Wrap Condition	X
Abdomen condition	X
Thorax/Lumbar Spine Bolts	X
Lumbar Spine Condition and Separation From End Caps	X
PELVIS:	
Iliac Crest bone	X
Flesh Condition	X
Hip Range of Motion	X
LEGS AND FEET:	
Knee Skins and Castings Condition	X
Leg Skin Condition	X
Foot Condition	X
Knee Joint Range of Motion	X
Ankle Range of Motion	X

NOTES: No damage to report.

Inspection Completed By: J. Clarridge

Date: 04/16/03

Transportation Research Center Inc.

SID Post-Use Inspection

Type: SID-HIII S/N: 028Mfr: VectorTest Date: 04/15/03Proj./Seg. No.: 20020455-1130Test Eng.: Ginny Watters

ITEM	POST-USE
HEAD:	
Head Skin Condition	X
Head Ballast Condition	X
NECK:	
Rubber Condition and Separation From End Caps	X
THORAX: Left Side Configuration	
Jacket Condition	*
Arm Foam Condition	X
Damper and Chest Pot Movement and Condition	X
Rib Cage Spring and Support Assembly Condition	X
Rib Wrap Condition	X
Abdomen condition	X
Thorax/Lumbar Spine Bolts	X
Lumbar Spine Condition and Separation From End Caps	X
PELVIS:	
Iliac Crest bone	X
Flesh Condition	X
Hip Range of Motion	X
LEGS AND FEET:	
Knee Skins and Castings Condition	X
Leg Skin Condition	X
Foot Condition	X
Knee Joint Range of Motion	X
Ankle Range of Motion	X

NOTES: Left side jacket torn in a couple of places. Will check with NHTSA dummy management about
getting a new one after post cal. No other damage to report.

Inspection Completed By: J. ClarridgeDate: 04/16/03

Appendix D

Test Equipment List and Calibration Information

Sign Convention
SAE J211 MAR95

Accelerometers: +X: Forward
 +Y: Rightward
 +Z: Downward

Potentiometers: +Chest longitudinal deflection: Outward
 +Chest lateral deflection: Rightward
 +Seat belt displacement: Outward
 +Seat belt extension: Elongation
 +Knee slider displacement: Distance between femur and tibia
 increased (in relation to a seated
 dummy)

Rotation potentiometers:
 +About the X-axis: Left foot-eversion
 Right foot-inversion
 +About the Y-axis: Left/right foot-dorsiflexion
 +About the Z-axis: Left foot-internal
 Right foot-external

Load cells: +Femur force: Tension
 +Seat belt force: Tension
 +Barrier force: Tension

Neck load cells: +X force: Head pushed rearward
 +Y force: Head pushed leftward
 +Z force: Head pulled upward (tension on neck)
 +X moment: Left ear rotating toward left shoulder
 +Y moment: Chin rotating toward chest
 +Z moment: Chin rotating toward left shoulder

Tibia load cells: +X force: Ankle forward, knee rearward
 +Y force: Ankle rightward, knee leftward
 +Z force: Tension
 +X moment: Bottom of tibia moving leftward
 +Y moment: Bottom of tibia moving rearward

Sign Convention. Cont'd.
SAE J211 MAR95

Lumbar load cells:

+X force:	Chest rearward, pelvis forward
+Y force:	Chest leftward, pelvis rightward
+Z force:	Chest upward, pelvis downward
+X moment:	Left shoulder toward left hip
+Y moment:	Sternum toward front of legs
+Z moment:	Right shoulder forward, left shoulder rearward

Frequency Response Classes
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	600
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head form Accelerations	1000

The direction column on the following sheets describes the transducer output as mounted and wired in the test location. The polarity column indicates whether a polarity change occurred during data acquisition to conform to J211 MAR95. See Report Sign Convention sheet for description of data output as presented in the report; occasionally channels have been adjusted in post-acquisition processing to conform to J211 MAR95.

Channel Report

4/25/2003 8:12:48 AM

Name of Test 030415 System MINIDAU Name of DAU DAU6

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol. Cal.	Group	Mfg.	Model
6001	03C03C14-F01	BOGXG1	MDB CENTER OF GRAVITY	FWD	600.51606 g	+ 3/28/2003	OK -1	Entran	EGE-73B6Q-200
6002	03C03C14-F21	BOGYG1	MDB CENTER OF GRAVITY	RT	594.65737 g	+ 3/27/2003	OK -1	Entran	EGE-73B6Q-200
6003	03C03C14-F24	BOGZG1	MDB CENTER OF GRAVITY	UP	606.92271 g	- 3/31/2003	OK -1	Entran	EGE-73B6Q-200
6004	03C03C14-F08	LRRXG1	MDB LTRR X-AXIS	RR	602.21124 g	- 3/28/2003	OK -1	Entran	EGE-73B6Q-200
6005	03C03C14-F06	LRRYG1	MDB LTRR Y-AXIS	RT	595.34883 g	+ 3/31/2003	OK -1	Entran	EGE-73B6Q-200

Channel Report

4/25/2003 8:12:48 AM

Name of Test 030415

Name of DAU DAU8

System MINIDAU

Chan.#	Sensor #	Monomonic	Description	System	MINIDAU	Dir.	Range	Pol. Cal.	Group	Mfg.	Model
8001	J27271	HEDXG1	Head Accel X			Rwd	800.50031	-	OK	Endevco	7264-2000TZ
8002	J27352	HEDYGI	Head Accel Y			Lft	793.42941	-	OK	Endevco	7264-2000TZ
8003	J27283	HEDZG1	Head Accel Z			Up	809.34541	-	OK	Endevco	7264-2000TZ
8004	J29134	HEDXRI	Head Accel X Red			Rwd	793.89691	-	OK	Endevco	7264-2000TZ
8005	J29020	IEDYRI	Head Accel Y Red			Lt	802.35692	-	OK	Endevco	7264-2000TZ
8006	J27322	HEDZRI	Head Accel Z Red			Up	814.04811	-	OK	Endevco	7264-2000TZ
8007	1716-0627-FX	NEKXF1	Neck Force X			Hd	8900.5691	-	OK	Denton	1716
8008	1716-0627-FY	NEKYF1	Neck Force Y			Hd	8904.8480	+	OK	Denton	1716
8009	1716-0627-FZ	NEKZF1	Neck Force Z			Hd	13331.510	+	OK	Denton	1716
8010	1716-0627-MX	NEKXMI	Neck Moment X			Rt Ear	282.90624	-	OK	Denton	1716
8011	1716-0627-MY	NEKMYI	Neck Moment Y			Chn	282.62862	+	OK	Denton	1716
8012	1716-0627-MZ	NEKZMI	Neck Moment Z			Chn	282.46679	+	OK	Denton	1716
8013	P25068	LURYGI	Left Upper Rib Y			Rgt	804.03798	+	OK	Endevco	7264C-2K-2-180
8014	P25067	LURYRI	Left Upper Rib Red Y			Rgt	808.88509	+	OK	Endevco	7264C-2K-2-180
8015	P25389	LLRYGI	Left Lower Rib Y			Rgt	799.52528	+	OK	Endevco	7264C-2K-2-180
8016	P25395	LLRYRI	Left Lower Rib Red Y			Rgt	788.95463	+	OK	Endevco	7264C-2K-2-180
8017	P14826	T12YGI	Lower Spine Y			Lft	401.80813	-	OK	Endevco	7264C-2K-2-180
8018	P25069	T12YRI	Lower Spine Red Y			Lft	398.15851	-	OK	Endevco	7264C-2K-2-180
8019	P25397	PEVYGI	Pelvis Accel Y			Lft	400.34404	-	OK	Endevco	7264C-2K-2-180
8020	P25061	PEVYRI	Pelvis Accel Red Y			Lft	401.07161	-	OK	Endevco	7264C-2K-2-180
8021	P25307	HEDXG4	Head Accel X			Rwd	809.10240	-	OK	Endevco	7264C-2K-2-180
8022	P25326	HEDYG4	Head Accel Y			Lft	808.84676	-	OK	Endevco	7264C-2K-2-180
8023	P25298	HEDZG4	Head Accel Z			Up	807.64741	-	OK	Endevco	7264C-2K-2-180
8024	P25318	IEDXRI	Head Accel X Red			Rwd	810.61397	-	OK	Endevco	7264C-2K-2-180
8025	P25301	HEDYRI	Head Accel Y Red			Lt	802.80983	-	OK	Endevco	7264C-2K-2-180
8026	P25305	HEDZRI	Head Accel Z Red			Up	807.23993	-	OK	Endevco	7264C-2K-2-180
8027	1716A-1535-PX	NEKXF4	Neck Force X			Hd	8891.7626	-	OK	Denton	1716A
8028	1716A-1535-FY	NEKYF4	Neck Force Y			Hd	8889.1703	+	OK	Denton	1716A
8029	1716A-1535-FZ	NEKZF4	Neck Force Z			Hd	13358.833	+	OK	Denton	1716A
8030	1716A-1535-MX	NEKXMI	Neck Moment X			Rt Ear	282.62505	-	OK	Denton	1716A
8031	1716A-1535-MY	NEKMYM	Neck Moment Y			Chn	282.40583	+	OK	Denton	1716A
8032	1716A-1535-MZ	NEKZMI	Neck Moment Z			Chn	282.83189	+	OK	Denton	1716A

Channel Report

4/25/2003 8:12:49 AM

Name of Test		030415		System		MINIDAU		Name of DAU		DAU9	
Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol. Cat.	Group	Mfg.	Model		
9001	P25231	LURYG4	Left Upper Rib Y	Rgt	806.24842	+	OK	Endevco	7264C-2K-2-180		
9002	J27507	LURYR4	Left Upper Rib Red Y	Rgt	808.38701	+	OK	Endevco	7264-2KMT5T		
9003	P25075	LLRYG4	Left Lower Rib Y	Rgt	801.25195	+	OK	Endevco	7264C-2K-2-180		
9004	P25076	LLRYR4	Left Lower Rib Red Y	Rgt	797.43326	+	OK	Endevco	7264C-2K-2-180		
9005	P25261	T12YG4	Lower Spine Y	Lft	401.56862	-	OK	Endevco	7264C-2K-2-180		
9006	P25374	T12YR4	Lower Spine Red Y	Lft	396.97923	-	OK	Endevco	7264C-2K-2-180		
9007	P25063	PEVYG4	Pelvis Accel Y	Lft	400.40353	-	OK	Endevco	7264C-2K-2-180		
9008	P25074	PEVYR4	Pelvis Accel Red Y	Lft	397.60196	-	OK	Endevco	7264C-2K-2-180		
9009	03D03C28-N22	RFSXG1	RGT SIDE SILL FRNT ST X	FWD	403.53089	+	OK -1	Entran	EGE-73B6Q-200		
9010	03D03C28-N21	RFSYG1	RGT SIDE SILL FRNT ST Y	LT	1020.7336	-	OK -1	Entran	EGE-73B6Q-200		
9011	03E03C28-N02	RFSZG1	RGT SIDE SILL FRNT ST Z	UP	396.89922	-	OK -1	Entran	EGE-73B6Q-200		
9012	03D03C28-N01	RRSXG1	RGT SIDE SILL RR ST X	FWD	400.62597	+	OK -1	Entran	EGE-73B6Q-200		
9013	03D03C28-N014	RRSYG1	RGT SIDE SILL RR ST Y	LT	984.61538	-	OK -1	Entran	EGE-73B6Q-200		
9014	03D03C28-N12	RRSZG1	RGT SIDE SILL RR ST Z	UP	399.68774	-	OK -1	Entran	EGE-73B6Q-200		
9015	03D03C28-N11	RDKXG1	RR FLRPN ABV AXLE X	FWD	996.88473	+	OK -1	Entran	EGE-73B6Q-200		
9016	03D03C28-N04	RDKYG1	RR FLRPN ABV AXLE Y	LT	984.61538	-	OK -1	Entran	EGE-73B6Q-200		
9017	03D03C28-N05	RDKZG1	RR FLRPN ABV AXLE Z	UP	994.56099	-	OK -1	Entran	EGE-73B6Q-200		
9018	03D03C27-N13	LRSYG1	LFT SIDE SILL RR ST Y	RT	989.37198	+	OK -1	Entran	EGE-73B6Q-200		
9020	03D03C28-N10	LFSYG1	LFT SIDE SILL FRNT ST Y	RT	999.02439	+	OK -1	Entran	EGE-73B6Q-200		
9021	P26525	LFCYG1	LFT FRNT DOOR CTRLN Y	RT	1506.5913	+	OK -1	Endevco	7264C-2K-2-180		
9022	03C03C14-N13	RRTYG1	RGT RR OCP COMP Y	RT	1468.7320	+	OK -1	Entran	EGE-73B6Q-200		
9023	03D03C28-N03	LFRYG1	LFT FRNT DOOR MIDRR Y	RT	1466.2084	+	OK -1	Entran	EGE-73B6Q-200		
9024	P25329	LFRYG1	LFT FRNT DOOR UPPER C/L	RT	1493.9309	+	OK -1	Endevco	7264C-2K-2-180		
9025	03D03C28-N06	LRMYG1	LFT RR DOOR MIDREAR Y	RT	1516.5876	+	OK -1	Entran	EGE-73B6Q-200		
9026	03D03C28-N15	LRUYG1	LFT RR DR UPPER CL Y	RT	1462.0217	+	OK -1	Entran	EGE-73B6Q-200		
9027	P25050	LLBYG1	LFT LOWER B-POST Y	RT	1471.3912	+	OK -1	Endevco	7264C-2K-2-180		
9028	J27030	LURYG1	LFT MID B-POST Y	RT	1478.9139	+	OK -1	Endevco	7264-2000TZ		
9029	03D03C28-N07	LLAYG1	LFT LOWER A-POST Y	Lt	1497.0760	-	OK -1	Entran	EGE-73B6Q-200		
9030	03D03C28-N18	LUAYG1	LFT MID A-POST Y	LT	1556.7041	-	OK -1	Entran	EGE-73B6Q-200		
9031	03D03C28-N20	LFTYG1	LFT FRNT ST TRK Y	RT	1461.1872	+	OK -1	Entran	EGE-73B6Q-200		
9032	03D03C28-N16	LRTYG1	LFT RR ST TR Y	LT	1481.4814	-	OK -1	Entran	EGE-73B6Q-200		

Channel Report

4/25/2003 8:12:49 AM

Name of Test 030415

Name of DAU DATA

System MINIDAU

Chan.#	Sensor #	Mnemonic	Description	Dir.	Range	Pol.	Cal.	Group	Mfg.	Model		
0001	03D03C27-N26	VCGXG1	VEH C/G X	FWD	1006.2893	g	+	4/3/2003	OK	-1	Entran	EGE-73B6Q-200
0002	03D03C27-N18	VCGYG1	VEH C/G Y	RT	1020.7336	g	+	4/3/2003	OK	-1	Entran	EGE-73B6Q-200
0003	03D03C27-N22	VCGZG1	VEH C/G Z	UP	989.37198	g	-	4/3/2003	OK	-1	Entran	EGE-73B6Q-200

Digital and System Channel Report

2003-04-25 08:12:32

Name of Test 030415
 enable Channel Short Name
 d Yes 6501 DIG6
 System MINIDAU
 Name of DAU DAU6
 description
 Data File DAT66501
 Module Type KM3710 Controller

description

long

short

bit position bit

MSB - bit 15 1
 bit 14 1
 bit 13 0
 bit 12 0
 bit 11 0
 bit 10 0
 bit 09 0
 bit 08 0
 bit 07 0
 bit 06 0
 bit 05 0
 bit 04 0
 bit 03 0
 bit 02 0
 bit 01 0
 bit 00 0
 LSB = bit 00

MDBRI
 MDBLI

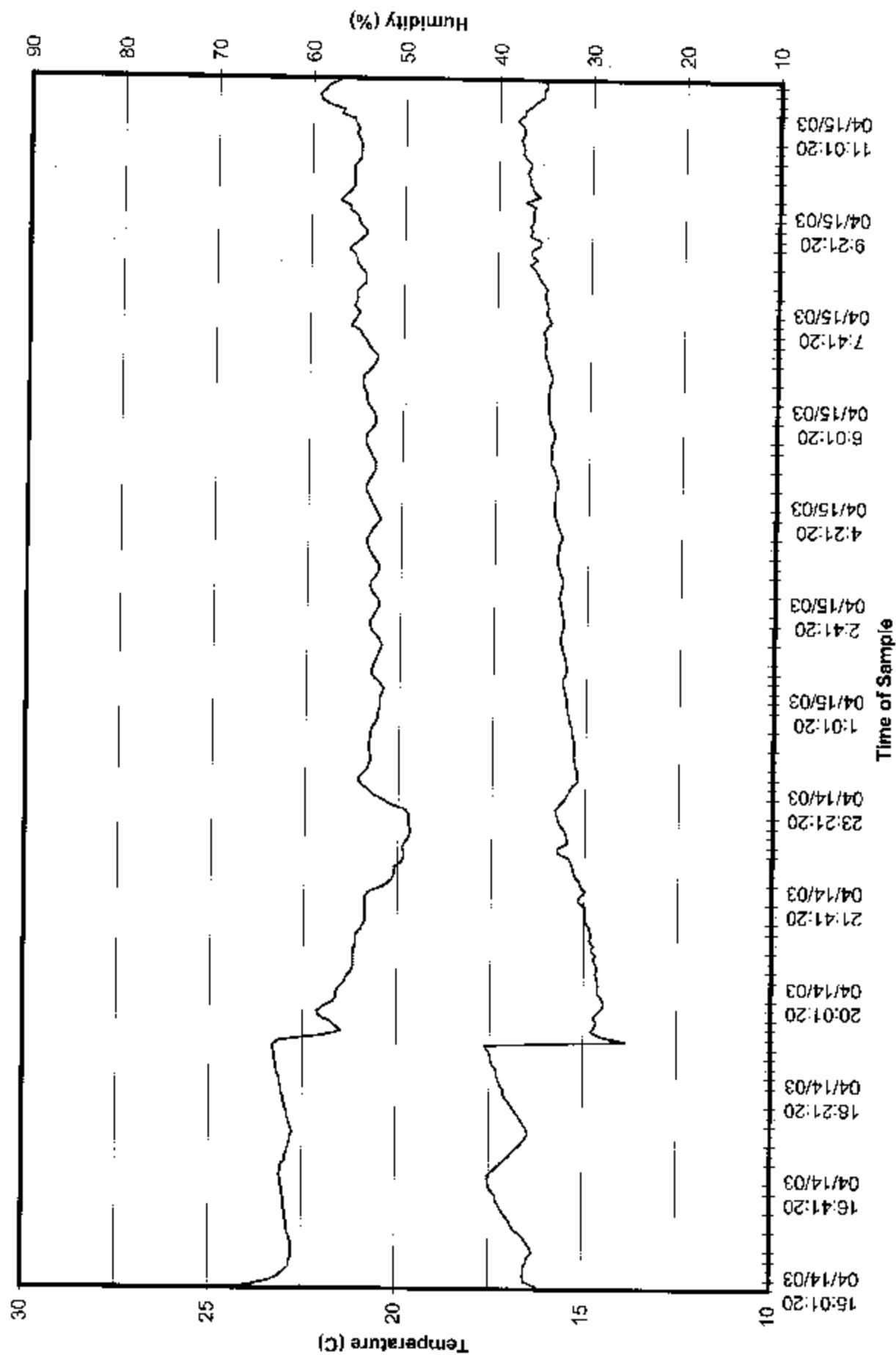
MDB RT SIDE CONTACT SWITCH
 MDB LT SIDE CONTACT SWITCH

Dummy 065hrk Type SID Description NHTSA - 065hrk SID-LEFT IMP.W/ RED ACCELS. CAL DUE 6-19-03 (DKS 3-11-03)J211

Chanace	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	Pos Output	Rip
HEDXG	Head Accel X	7264-2000TZ	J27271	Endevco	g	2000	3/11/2003	Rwd	1
HEDYG	Head Accel Y	7264-2000TZ	J27352	Endevco	g	2000	3/11/2003	Lft	1
HEDZG	Head Accel Z	7264-2000TZ	J27283	Endevco	g	2000	3/11/2003	Up	1
IIEDXR	Head Accel X Red	7264-2000TZ	J29134	Endevco	g	2000	3/11/2003	Rwd	1
IIEDYR	Head Accel Y Red	7264-2000TZ	J29020	Endevco	g	2000	3/11/2003	Lft	1
IIEDZR	Head Accel Z Red	7264-2000TZ	J27322	Endevco	g	2000	3/11/2003	Up	1
NEKXF	Neck Force X	1716	1716-0627-FX	Denton	0.000191111 N	8896.4	3/10/2003	Hd Fd, Cst Rt	1
NEKYF	Neck Force Y	1716	1716-0627-FY	Denton	0.000188514 N	8896.4	3/10/2003	Hd Lft, Cst Rt	0
NEKZF	Neck Force Z	1716	1716-0627-FZ	Denton	0.000085345 N	13344.6	3/10/2003	Hd Up, Cst Dn	0
NEKXM	Neck Moment X	1716	1716-0627-MX	Denton	0.005914336 N.m	282.5	3/10/2003	Rt Bar to Rt Shld	1
NEKYM	Neck Moment Y	1716	1716-0627-MY	Denton	0.005978761 N.m	282.5	3/10/2003	Chm to Strum	0
NEKZM	Neck Moment Z	1716	1716-0627-MZ	Denton	0.00831469 N.m	282.5	3/10/2003	Chm to Lt Shld	0
LURYG	Left Upper Rib Y	7264C-2K-2-18	P25068	Endevco	g	2000	12/19/2002	Rgt	0
LURYR	Left Upper Rib Red Y	7264C-2K-2-18	P25067	Endevco	g	2000	12/19/2002	Rgt	0
LLRYG	Left Lower Rib Y	7264C-2K-2-18	P25389	Endevco	g	2000	12/18/2002	Rgt	0
LLRYR	Left Lower Rib Red Y	7264C-2K-2-18	P25395	Endevco	g	2000	12/19/2002	Rgt	0
T12YG	Lower Spine Y	7264C-2K-2-18	P14826	Endevco	g	2000	12/19/2002	Lft	1
T12YR	Lower Spine Red Y	7264C-2K-2-18	P25069	Endevco	g	2000	12/19/2002	Lft	1
PEVYG	Pelvis Accel Y	7264C-2K-2-18	P25397	Endevco	g	2000	12/19/2002	Lft	1
PEVYR	Pelvis Accel Red Y	7264C-2K-2-18	P25061	Endevco	g	2000	12/19/2002	Lft	1

Dummy	028air	Type	SID/H3	Description	NHTSA - 028a SID-LEFT IMP. CONFIG. w/RED ACCELS CAL DUE 6-19-03(DKS 4-14-03)J2				
Chsname	Location	Model	Name	Manufacturer	Sens./mV/V/U	Fullscale	Caldate	Pos Output	Flip
HEDXG	Head Accel X	7264C-2K-2-18	P25307	Endevco	g	2000	1/22/2003	Rwd	1
HEDYG	Head Accel Y	7264C-2K-2-18	P25326	Endevco	g	2000	1/22/2003	Lft	1
HEDZG	Head Accel Z	7264C-2K-2-18	P25298	Endevco	g	2000	1/22/2003	Up	1
HEDXR	Head Accel X Red	7264C-2K-2-18	P25318	Endevco	g	2000	1/22/2003	Rwd	1
HEDYR	Head Accel Y Red	7264C-2K-2-18	P25301	Endevco	g	2000	1/22/2003	Lt	1
HEDZR	Head Accel Z Red	7264C-2K-2-18	P25305	Endevco	g	2000	1/21/2003	Up	1
NEKXF	Neck Force X	1716A	1716A-1535-FX	Denton	0.000185746 N	8896.4	3/21/2003	Hd Fd,Cst Rt	1
NEKYF	Neck Force Y	1716A	1716A-1535-FY	Denton	0.000181126 N	8896.4	3/21/2003	Hd Lt,Cst Rt	0
NEKZF	Neck Force Z	1716A	1716A-1535-FZ	Denton	9.37083E-05 N	13344.6	3/21/2003	Hd Up,Cst Dn	0
NEKXM	Neck Moment X	1716A	1716A-1535-MX	Denton	0.00580637 N-m	282.5	3/21/2003	Rt Ear to Lt Shld	1
NEKYM	Neck Moment Y	1716A	1716A-1535-MY	Denton	0.005701238 N-m	282.5	3/21/2003	Chn to Strna	0
NEKZM	Neck Moment Z	1716A	1716A-1535-MZ	Denton	0.008154336 N-m	282.5	3/21/2003	Chn to Lt Shld	0
LURYG	Left Upper Rib Y	7264C-2K-2-18	P25231	Endevco	g	2000	12/13/2002	Rgt	0
LURYR	Left Upper Rib Red Y	7264-2KCM5T	J27507	Endevco	g	2000	3/18/2003	Rgt	0
LLRYG	Left Lower Rib Y	7264C-2K-2-18	P25075	Endevco	g	2000	12/19/2002	Rgt	0
LLRYR	Left Lower Rib Red Y	7264C-2K-2-18	P25076	Endevco	g	2000	12/19/2002	Rgt	0
TL2YG	Lower Spine Y	7264C-2K-2-18	P25261	Endevco	g	2000	11/21/2002	Lft	1
TL2YR	Lower Spine Red Y	7264C-2K-2-18	P25374	Endevco	g	2000	12/19/2002	Lft	1
PEVYG	Pelvis Accel Y	7264C-2K-2-18	P25063	Endevco	g	2000	12/19/2002	Lft	1
PEVYR	Pelvis Accel Red Y	7264C-2K-2-18	P25074	Endevco	g	2000	12/19/2002	Lft	1

55/28 KPH 90 DEGREE SIDE IMPACT / 030415





SIDE IMPACTOR BARRIER CERTIFICATION

Date: April 1, 2003
To: Transportation Research
Ship & Rec Bldg 50
10820 St. Route 347
East Liberty, OH 43319-0367

PURCHASE ORDER INFORMATION

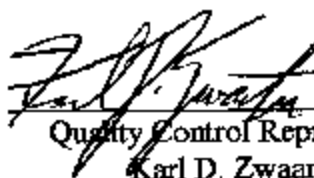
Customer P.O. Number: 22964
Work Order Number: 16444
Quantity: 01 piece

CORE INFORMATION

Core Type: PCGA-1/4-5.2-P-3003-T
Measured Cell Size: 0.250 inches
Measured Density: 5.2 pcf

Unit Number: 013C0203

This is to certify that the aluminum honeycomb core supplied, under the unit number provided, meets the crush requirements of 232 - 250 psi as per DWG# DSL-1285.


Quality Control Representative
Karl D. Zwaanstra





PLAScore

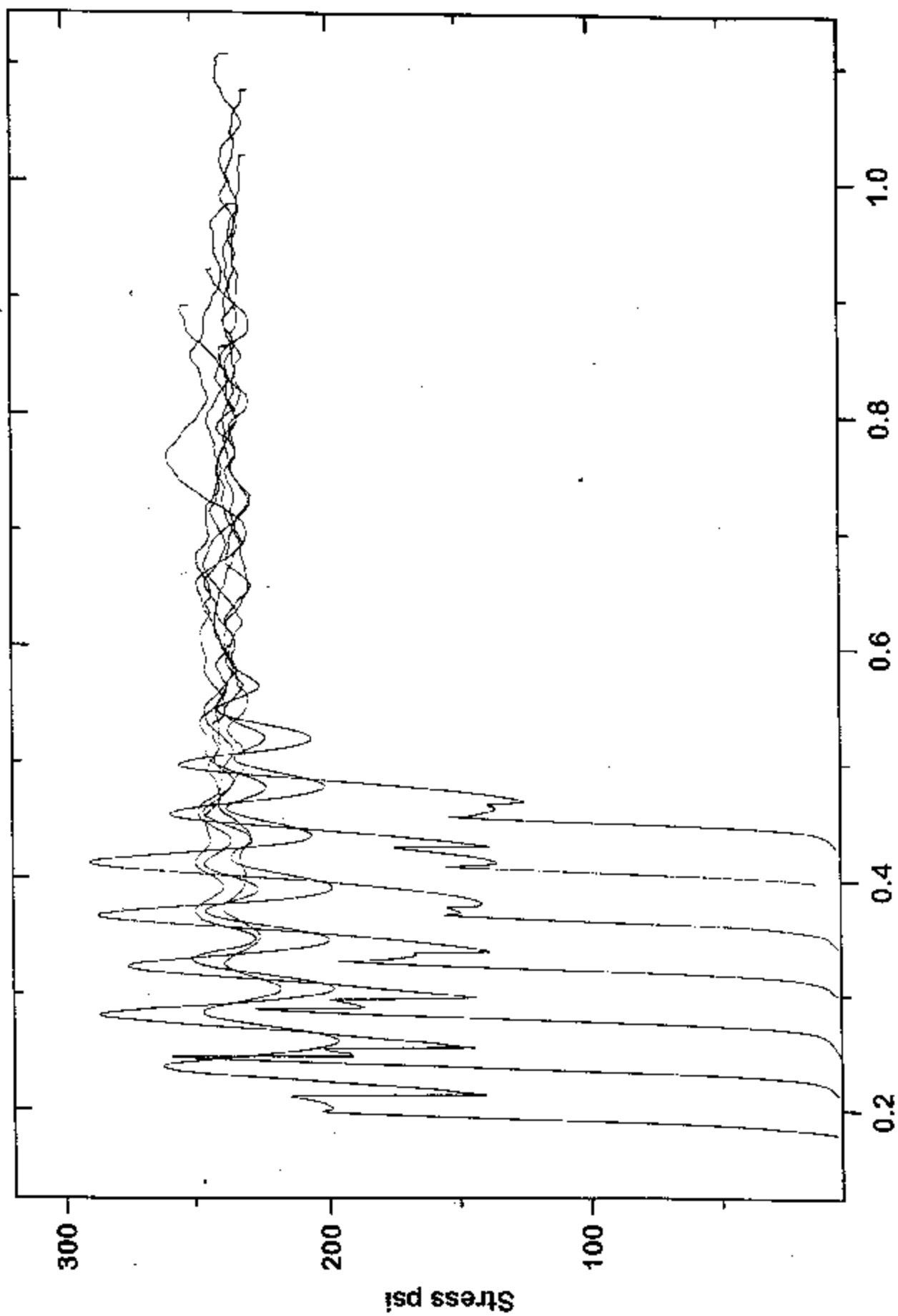
Crush Data

232 - 250 psi per DWG # DSL-1285

Block Number: 013C0203

<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	233.48	233.35	237.86
2	242.12	244.14	240.86
3	240.11	239.69	235.51
4	239.95	247.24	244.81
5	236.72	235.46	235.51
6	233.23	233.94	234.72
7	235.06	233.80	236.57

BLOCK # 013C0203 Sample ID: IN226629





SIDE IMPACTOR BARRIER CERTIFICATION

Date: April 1, 2003
To: Transportation Research
Ship & Rec Bldg 50
10820 St. Route 347
East Liberty, OH 43319-0367

PURCHASE ORDER INFORMATION

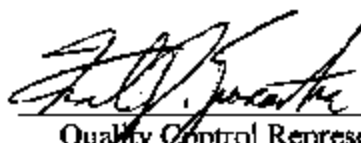
Customer P.O. Number: 22964
Work Order Number: 16444
Quantity: 01 piece

CORE INFORMATION

Core Type: PAMG-3/8-1.6-001-P-5052-T
Measured Cell Size: 0.375 inches
Measured Density: 1.6 pcf

Unit Number: 017A0303

This is to certify that the aluminum honeycomb core supplied, under the unit number provided, meets the crush requirements of 45 psi +/- 2.5 psi as per DWG# DSL-1285.


Quality Control Representative
Karl D. Zwaanstra





PLASCORE

Crush Data

45 psi +/- 2.5 psi per DWG # DSL-1285

Block Number: 017A0303

<u>Specimen Number</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>
1	47.36	47.37	46.10
2	45.92	46.01	45.65
3	44.49	45.21	44.80
4	47.04	47.15	46.28
5	47.27	46.64	46.10
6	45.56	45.16	43.98
7	46.96	47.04	46.54

BLOCK # 017A0303 Sample ID: IN226932

